REVIEW OF INTERTIDAL ZONING

WITHIN THE

OLYMPIC COAST NATIONAL MARINE SANCTUARY

Prepared by the
Marine Conservation Working Group
under the OCNMS Advisory Council

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EXECUTIVE SUMMARY

Although the western shore of the Olympic Peninsula adjacent to the Olympic Coast National Marine Sanctuary (OCNMS) is remote, it is not isolated from impacts of human civilization. These shores are popular with local residents and are a world-renowned destination for visitors. Visitation levels are high in summer months and certain to increase in the future. The popularity of these shores will continue to challenge managers, who must balance visitor use with protection of natural resources and habitats in an area that includes national wildlife refuges, a national park, a national marine sanctuary, and a state seashore conservation area, as well as sovereign tribal reservation lands and treaty guaranteed usual and accustomed grounds.

The Marine Conservation Working Group (MCWG) was established by the OCNMS Advisory Council in early 2000 to evaluate the issue of marine zoning as a management tool, to make specific recommendations on the status and effectiveness of existing zoning, and to develop an intertidal zoning strategy. The area of concern was federally owned intertidal shore adjacent to the sanctuary where OCNMS and Olympic National Park share jurisdiction. The MCWG did not consider or develop zoning recommendations for tribal reservation shores. Representatives from 14 groups, including tribal, federal, state and county governments, and the commercial fishing, conservation and scientific communities, were invited to participate in the MCWG. Sixteen meetings were held between April 2000 and October 2003. Various representatives attended meetings and contributed at differing levels throughout the process. This report represents the contributions of participants in the process. Participation in the process does not imply that invited individuals or agencies supported the intertidal zoning review process or the content of this report.

Treaties between the U.S. federal government and coastal tribes were made nearly 150 years ago and are still in full force and effect today. Through these treaties, the tribes reserved rights to gather fish and shellfish in perpetuity at all usual and accustomed (U&A) grounds, including intertidal areas of federally managed lands. Further, the Boldt decision and subsequent U.S. V. Washington court proceedings affirm the rights of the tribes to co-manage the fishery resources within their U&A areas. The Tribes rely on these U&A grounds for subsistence and a moderate living from the fishery. In addition to tribal gatherers and fishers, tribal scientists and staff require access to the intertidal zone to survey, sample, and conduct work in support of resource

management. Management measures, such as restrictions on collection of intertidal species from federally managed intertidal areas, can not infringe on tribal treaty rights unless a conservation necessity exists and measures undertaken first by non-tribal members are not sufficient to prevent the destruction of a particular species. Consequently, MCWG discussions about potential harvest and access restrictions were held with the clear understanding that new management measures to restrict intertidal gathering or access, if implemented, would be applicable to non-tribal persons, and could not restrict exercise of tribal treaty rights unless they were adopted independently by a tribal government.

Zoning is designation of discrete management areas within a larger area that have special guidelines for activities that differ from guidelines for the larger area. Zoning can encourage multiple uses and accommodate differing conservation, economic, recreational, subsistence, and development needs of the human community. For the most part, existing zoning and management practices in the area of concern were considered effective to address current visitation levels and interests. While acknowledging this, the MCWG discussed the value of intertidal zoning not as a means to restore damaged habitat and depleted species, but rather as a measure to prevent impacts that could occur in the future with increased human utilization. This could be considered a proactive management review, a precautionary approach that applies prudent foresight while taking into account uncertainties associated with our understanding of ecosystems and human impacts on those systems.

The deliberations of the MCWG included 1) review of marine zoning and protected areas science and practice at other sites, 2) summary of existing ownership, jurisdiction, and zoning, 3) draft a vision statement and goals, 4) review the ecology of the outer coast, including oceanography, intertidal habitat, and organism distribution, 5) identify sites of extraordinary ecological significance and highest priority for conservation, 6) summarize current and potential threats to habitats, organisms, and area aesthetics, and 7) develop options for augmented protection through intertidal zoning.

The vision statement developed by MCWG participants was “the Marine Conservation Working Group recommends zoning for intertidal areas of the OCNMS to conserve marine biodiversity, to sustain natural marine populations and habitats, and to foster stewardship in the OCNMS by 1) defining locations for and types of intertidal zoning that establish appropriate protective measures, including a network of intertidal reserves, 2) researching the effects of intertidal zoning, 3) establishing areas for research and for monitoring long term trends in intertidal zones, and 4) educating the public about marine conservation.”

The principal threats to conservation and management identified were organism gathering and poaching, bait collection, trampling, wildlife disturbance, destructive tidepool exploration, souvenir collection, erosion on sea stacks, and beach fires. Degradation of habitats and depletion of organism abundance is a widespread phenomenon in heavily visited and populated areas throughout the world. In Puget Sound, impacts of recreational visitors became apparent more than a decade ago, when biologists noted some beaches were denuded of almost all edible marine organisms. Although indications are that severe and widespread damage has not occurred on the western Olympic Peninsula shore, the risk is increasing with growing visitation levels and changing visitor use. Based on analysis of these threats, the MCWG developed three zone types with management options that could be applied to the shores: intertidal reserves, wildlife protection zones, and high use zones.

Participants in the MCWG clearly held varying views on the types of management measures and the locations where they should be applied. Although a consensus agreement on a single set of

recommendations could not be achieved, all participants recognized the importance of documenting this process and developing a report for the OCNMS Advisory Council. Participants wanted to recognized the effort that went into this review of intertidal zoning and felt it was important to acknowledge and honor the group's work. Moreover, participants wanted to present a single report to document the process and range of opinions and to avoid a fracture into a majority and minority groups with separate reports. This report serves to document the process and to summarize the differing opinions developed by MCWG participants.

Intertidal reserves were defined as an intertidal area between extreme high water and extreme low water that is closed to all collection of living and non-living things and other extractive human uses. The purposes of intertidal reserves are:

1. to provide limited areas where the integrity of biological communities has minimal influence from harvest pressure, for values inherent in the communities and distinct from human use values,
2. to provide limited areas of intact biological communities where research can be conducted to evaluate natural processes in the absence of harvest, and areas to serve as controls for study of community dynamics at harvested areas,
3. to provide protected areas that can serve as source sites for propagation of intertidal organisms to offsite areas,
4. to encourage a public conservation ethic by establishing protected zones where the value of resource protection can observed, understood, and appreciated, and
5. to provide areas where the accumulation of shells, sticks, rocks, and other natural materials is representative of a state undisturbed by the actions of transient visitors.

The management recommendations for intertidal reserves are:

1. to prohibit the collection of all living organisms in an intertidal reserve, except for treaty use in all Usual and Accustomed Areas,
2. to prohibit souvenir collection of rocks, sticks, shells, and other beach materials of natural origin,
3. to prohibit beach fires to preserve the natural state of woody flotsam and jetsam on the shore, and
4. to implement the intertidal reserve status for a long-term, indefinite period.

Seven potential intertidal reserve sites were selected through evaluation of a variety of attributes including habitat type, sensitivity to harvest impacts, and accessibility of the shore. The intertidal reserve sites are Point of Arches, Cape Alava to Sand Point, 2-Bit Point, Cape Johnson/Hole-in-the-Wall, Teahwhit Head, Taylor Point, and Goodman Creek to Hoh River. This set of potential intertidal reserves has the following attributes.

1. All are on the ONP shore; none are on tribal reservations or state-owned shores, although they are in tribal U&A areas.
2. They are widely distributed over the ONP shoreline.
3. They include habitat representative of each of the 5 major intertidal habitat types found on ONP shores, which provides protection for a wide variety of intertidal species that live on the shores.
4. They comprise 37% of the ONP marine shoreline.
5. Many of these potential intertidal reserve sites contain rocky headlands that are basically inaccessible to humans (Teahwhit Head, Taylor Point, Point of Arches, Cape Johnson, Goodman Creek and Hoh Head). These headlands are sites of high biodiversity (i.e., high biomass/productivity and numbers of species) and potential source sites for distribution of larvae to broader portions of the shore.

6. One potential intertidal reserve site was identified to protect against destructive organism collection practices primarily because it is an area that receives the most backcountry visitors on the outer coast (Cape Alava-Sand Point). Other site-specific regulations apply to this area (i.e., limit on number of backcountry permits, beach fire prohibition) for this reason.
7. One potential site was identified specifically because it is a relative inaccessible area of hardshell clam habitat (2-Bit Point).
8. Two potential sites were identified because they include a variety of habitat types in a long, contiguous stretch distant from other reserve sites (Cape Johnson-Chilean Memorial and Goodman Creek-Hoh Head).

All participants were not in agreement about where and how intertidal reserves should be proposed. There was, however, consensus among participants that the Advisory Council should receive a report that summarized deliberations. This was accomplished through a polling of participants, in which all MCWG invitees were asked to participate. To capture the range of opinion, participants developed these options for implementation of intertidal reserves:

1. No intertidal reserves.
2. We have identified areas of special conservation significance for ongoing management decisions; no specific management recommendations are offered.
3. Voluntary intertidal reserves with emphasis on public outreach/education.
4. Voluntary intertidal reserves with emphasis on public outreach/education, and either compliance-based or resource damage trigger for evaluation of management options on a site-specific basis.
5. Regulatory establishment of intertidal reserves with initial emphasis on public outreach/education, rather than enforcement. Enforcement actions would be implemented after a suitable period.
6. Regulatory establishment of intertidal reserves with public notification and immediate implementation of enforcement actions.

A summary of the polling results follows.

- All participants were able to support recognition of areas of special conservation significance without specific management recommendations (option 2) and voluntary intertidal reserves with no trigger for regulatory implementation (option 3).
- Most participants felt the best option for implementation was recognizing special areas without making management recommendations (option 2).
- Several expressed enthusiastic support for either voluntary or regulatory intertidal reserves without strict enforcement (options 3 and 4).
- Consistently low levels of support were expressed for no intertidal reserves (option 1) or intertidal reserves with immediate enforcement (option 6).

The MCWG developed the wildlife protection zone to address unique management considerations for offshore rocks, sea stacks, and islands within ONP and Washington Islands National Wildlife Refuges, which have extraordinary value for wildlife. Nesting seabirds and marine mammals hauled out on the shore are particularly vulnerable to human disturbance. The islands and rocks provide habitat for over 72 percent of Washington State's nesting seabirds and host some of the largest seabird colonies in the continental U.S. For some seabird species, these are the only breeding sites in Washington, likely due to a loss of nesting habitat elsewhere in the state. Existing regulations for intertidal areas the same as ONP regulations for the mainland shore that allow for diverse use of intertidal areas. These regulations are inconsistent with refuge regulations that prohibit access to upland portions of the islands where the U.S. Fish and Wildlife Service has jurisdiction.

The wildlife protection zone was developed to create consistency between intertidal and uplands portions of the islands and to provide maximum protection for the wildlife on the islands. This zone was defined as an intertidal area closed to all access, except by permit or for emergency response. The intertidal areas of offshore rocks and islands currently receive little visitation, although there is no data to characterize the level of use. It is widely recognized, however, that the islands are hazardous and unstable areas for human use and access. Restricting human access to the islands and rocks serves the dual purpose of protecting the habitats and species and eliminating the safety risk associated with visiting these shores.

The purposes of wildlife protection zones were defined as:

1. to provide specific areas that are preserved in an undisturbed state with minimal human intrusion, for their intrinsic and scientific value at limited but appropriate sites,
2. to protect critical nesting and breeding grounds for seabirds and haul out areas for marine mammals that are particularly susceptible to disturbances by humans on the shore,
3. to provide a level of protection for intertidal areas equal to that of the islands' uninhabited terrestrial environment, and
4. to enhance public safety by restricting access to these dangerous and unstable environments.

The management options developed by the MCWG for wildlife protection zones were as follows.

1. Wildlife protection zone should apply to all marine offshore rocks, reefs, and islands within the Washington Islands National Wilderness Refuges, Olympic National Park, and Olympic Coast National Marine Sanctuary boundaries , as well as Crying Lady Rock off Second Beach. Within this zone, access should be prohibited without a permit, except for emergency response.
2. Access permits could be granted for scientific research. Inter-agency coordination is required for this permitting. Research that cannot reasonably be conducted at other sites should be favored.
3. Other management actions should be considered as necessary (e.g., interpretive signs on the mainland, increased enforcement presence) to address emerging issues such as emerging interest in technical rock climbing or new extreme sports.

For the participant polling, the same range of implementation options developed for intertidal reserves was applied to the wildlife protection zone. A summary of the results follows.

- All participants supported this zone type at some level; all participants rejected option 1 (no wildlife protection zone). This broad support is recognition of the unique wildlife value of the islands, both on the uplands and intertidal areas.
- All participants gave strong support for access restrictions on the islands, either as voluntary measure (options 3 and 4) or a regulatory measure with emphasis on public outreach rather than enforcement (option 5).
- ONP and research representatives gave enthusiastic support for wildlife protection zones and did not support at any level other options for implementation.
- Strong polarization is evident under option 5, where the majority of participants were enthusiastic about this option, but the Quinault Tribe, commercial fishing, and WDNR representatives did not support this option.
- No participants supported implementation with immediate enforcement actions (option 6).

The third zone type developed by MCWG participants was the high use zone. This zone was developed to address the cumulative impact of numerous visitors that could lead to degradation of the shore. High use zones were defined as areas that receive or are susceptible to physical disturbance as a result of high levels of visitation. Based primarily on visitation levels, high use areas on the ONP shore were identified at Cape Alava to Sand Point, Rialto Beach to Hole-in-the-Wall, Second Beach, Third Beach, and the coast stretch between Ruby Beach and South Beach that includes Kalaloch, where Highway 101 follows the coast closely.

The purposes of a high use zone designation are:

1. to minimize non-harvest human disturbance and impacts at high use sites,
2. to encourage education and interpretive activities at appropriate sites,
3. to focus trampling impacts at particular sites, and
4. to instill a stewardship ethic in visitors through interpretive opportunities.

The MCWG did not prescribe specific management recommendations for high use zones, but outlined a variety of creative suggestions that could be implemented. In many cases, existing management actions by ONP were considered appropriate for addressing high levels of visitation and were acknowledged as being proactive in addressing potential visitor impacts. MCWG options for management of high use zones included registration of large visitor groups to provide opportunity to educate about appropriate behaviors that minimize human impacts, increased ONP interpretive staff during peak demand periods, enhanced interpretive efforts at contact stations and trailheads that focus on conservation and minimization of human impacts, and long term monitoring for human impacts at high use sites.

For high use zones, participants developed only two options for implementation.

1. No designation of high use zones.
2. Recognize high use zones as areas where high visitation levels could require special management consideration

All participants gave strong support to the recognition of and special management consideration at high use zones. The majority of participants were enthusiastic in their support for high use zones.

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1.0 INTRODUCTION

The outer coast of Washington State is perceived by many to be a modern day marine wilderness, remote from dense human developments, at the far edge of the continental United States. This perception is reinforced by the dramatic and elemental scenery, towering sea mounts, secluded beaches, exposure to weather's forces, and powerful waves crashing ashore from across the vast expanse of the world's largest ocean. Visitors travel to the outer coast for many reasons, most come to view the natural beauty, escape from city life, experience the wilderness, recreate in a natural setting, and enjoy recreational and charter fishing.

Although Washington's outer coast is remote, it is not isolated from impacts of human civilization. Humans have inhabited the Pacific Northwest coast for millennia, and their practices have influenced the natural environment in ways we do not fully comprehend (Pauly et al. 1998). Currently, visitation levels at Washington's coastal beaches are high, and parking lots are often full on summer days. An astonishing 40% of all backcountry use, or overnight travel, in Olympic National Park (ONP) occurs on the outer coast. The popularity of this shoreline has challenged managers and has begun to have repercussions for visitors. For example, high use levels and associated degradation at campsites have prompted ONP to implement a permitted, limited entry system for backcountry use in the Cape Alava area. Each year, a beach cleanup produces huge volumes of non-biodegradable trash that comes both as flotsam from the ocean and litter from visitors, and provides visible evidence of the shore's connectedness to the world beyond.

The Olympic Coast National Marine Sanctuary (OCNMS or sanctuary) was designated in 1994 as part of the federal National Marine Sanctuary System. The area was recognized for its extraordinary beauty and rich biological diversity, as a marine area deserving of enhanced protection and preservation. OCNMS covers approximately 3,300 square miles of the outer coast of Washington, stretching north from the Copalis River around Cape Flattery to Koitlah Point, approximately 4 nm into the Strait of Juan de Fuca (Figure 1). OCNMS was established as a multiple use marine protected area, with mandates for resource protection, research, and education, but with relatively few restrictions on human activities. Activities prohibited by sanctuary regulations include overflights below 2000 feet within 1 nm of the coast or national wildlife refuge islands, oil exploration and drilling, extraction of ocean minerals, alteration of the seafloor with the exception of traditional fishing practices, and discharge and deposit of materials. As described in the final environmental impact statement and management plan for OCNMS, the major benefit of sanctuary designation is the integration of important nearshore and oceanic marine resource zones and corresponding human activities into one management regime (NOAA 1993). Other benefits of sanctuary designation are 1) enhancement of research and monitoring, 2) promotion of public awareness of the marine ecosystem, 3) assistance coordinating initiatives implemented by existing authorities, 4) formulation of long-range plans that respond to currently unforeseen threats, and 5) regulation of activities which either pose a current risk of causing significant damage or may later prove harmful as use of the area increases (NOAA 1993).

Whereas the existing regulations do provide a level of protection to meet the sanctuary's mission of ecosystem-wide conservation of ecological and historic resources, activities such as gathering of intertidal resources and bottom trawling continue to occur at levels that are poorly documented or in ways that might contribute to habitat degradation. Other potential threats to sanctuary resources include a growing regional population and increased visitation levels, trampling or crushing of intertidal life at popular sites, minimal regulation of recreational collection for most species, and disturbance to wildlife in nearshore areas. In this respect, the outer Olympic coast is not unique nor is it invulnerable to such impacts. Warning signals come from around the region and throughout the world, alerting managers and the public to the tragedies of habitat destruction

and fishery collapses that result from a variety of coastal activities. Although most current impacts and threats to OCNMS habitats and resources are considered minimal, the sanctuary is taking a precautionary approach to resource management and heeding the National Marine Sanctuary Program's mandate to improve understanding, management, and conservation of marine resources, and to protect the marine habitat within its boundaries.

This report summarizes the work of participants in the Marine Conservation Working Group (MCWG) in developing a set on intertidal zoning options for the shores adjacent to the sanctuary. The origins of the MCWG and the group's purpose and mission are discussed in Sections 2 and 3, respectively. Section 4 describes the geographic areas for which intertidal zoning was considered, and Section 5 reviews the existing zoning in these areas. A brief outline of the process followed to develop zoning options is in Section 6, followed by the group's vision statement and goals (Section 7). The rationale for considering intertidal zoning is discussed in Section 8, followed by brief description of the regional marine ecology in Section 9. Section 10 reviews the principal threats to conservation. The zoning options that resulted from this process are outlined in Section 11, followed by ideas for public education and outreach in Section 12.

2.0 Genesis of the Marine Conservation Working Group

In an effort to provide more comprehensive protection and conservation of marine intertidal habitats and biota, the OCNMS Superintendent initiated a process to evaluate the effectiveness of current management and to consider zoning to improve management of intertidal areas. The focus of this process was limited to intertidal areas for several reasons, the most significant of which was availability of information. Intertidal habitats and biological communities of the sanctuary shoreline are well described and documented in a spatially nested GIS database that provides fine scale (e.g., over the scale of a few meters) quantitative characterization of the sanctuary's shores (Schoch 1998). Comparable data for offshore areas within the sanctuary are extremely sparse and patchy. Moreover, evaluation of zoning options for intertidal areas was thought to be a manageable task, feasible with the sanctuary's financial and staff resources. In this effort, OCNMS has a strong partnership with ONP, two federal organizations that have similar mandates and share jurisdiction of intertidal areas on the outer coast.

In December 1999, a proposal to establish the MCWG was presented by the OCNMS Superintendent to the Sanctuary Advisory Council (SAC) of OCNMS. The SAC approved the concept and requested further clarification on the composition, budget, tribal perspective, and public education/outreach. These issues were outlined for the SAC in January 2000. The MCWG was conceived as a consensus based group with invited representatives from four Native American Tribes with reservation lands on the outer coast (Makah, Quileute, Hoh, and Quinault), federal agencies (ONP, U.S. Fish and Wildlife Service, National Marine Fisheries Service), state agencies (Departments of Fish and Wildlife, Natural Resources, and State Parks and Recreation Commission), and representatives from commercial fishing, conservation, and the scientific community. The first meeting of the MCWG was held in April 2000. A meeting timeline/outline and participant/contact list for the MCWG are provided in Appendix A.

3.0 Purpose and Mission

The MCWG's purpose and mission were described in the December 1999 proposal to the SAC, in advance of meetings by the MCWG. The group's purpose was "to evaluate the issue of marine zoning as a management tool within the Olympic Coast NMS and to make specific recommendations on the following: status and effectiveness of existing zoning within OCNMS,

an intertidal zoning strategy, and a public education and outreach strategy regarding zoning, focusing on the issue of intertidal zoning." The mission statement reads "Using the best available ecological, socio-economic, and other information, the Marine Conservation Working Group will seek to forward a consensus recommendation to the Sanctuary Advisory Council and sanctuary Manager regarding an intertidal zoning strategy within the collective jurisdictions of the Olympic National Park and the Olympic Coast NMS. The recommendation will be forwarded to other jurisdictions that have management authority for their consideration and potential adoption."

3.1 What is Zoning?

> **Zoning**: creation of one or more zones, or discrete areas, contained within a protected area that have special guidelines or regulations for activities that differ from guidelines for the larger protected area.

During early meetings of the MCWG, there was a current of uncertainty about the concept of "zoning". In this case, a zone can be defined as a discrete area, contained within a protected area that has special guidelines or regulations for activities that differ from guidelines for the larger protected area. In it's present form, the whole of the sanctuary is a zone, a marine protected area (MPA), which is a term that can be applied to a broad range of sites that have been designated by law or other effective means to protect part or all of the environment (see Definitions in Appendix A). OCNMS regulations also include existing zoning that applies to part or all of its area (i.e., overflight restrictions and prohibitions on drilling and dredging).

Zoning within larger management areas is a common management practice employed throughout the world. The principal objectives of marine zoning within an MPA typically are

- to protect natural and cultural qualities while allowing a variety of reasonable human uses;
- to separate conflicting human activities;
- to provide protection for critical or representative habitats, ecosystems, and ecological processes;
- to ensure the conservation of the area's resources and habitats in perpetuity;
- to reserve suitable areas for particular human uses, while minimizing the effects of these uses on the area; and
- to preserve areas in their natural state undisturbed by humans except for the purposes of scientific research and education (Kelleher and Kenchington 1992).

Within the National Marine Sanctuary Program, zoning has been implemented at many sites, all of which are MPAs each with a unique set of goals and regulations. According to the National Research Council, all but the smallest MPAs require zoning plans to accommodate the spectrum of different uses (NRC 2000). The following quote from the Florida Keys National Marine Sanctuary's Zoning Action Plan applies equally well for OCNMS.

> "Zoning is critical to achieving the sanctuary's primary goal of resource protection. Its purpose is to protect and preserve sensitive components of the ecosystem by regulating within the zoned areas, while facilitating activities compatible with resource protection. Zoning will ensure that areas of high ecological importance will evolve in a natural state, with minimal human influence. Zoning will also promote sustainable use of the sanctuary resources, and will protect areas representing diverse sanctuary habitats and

areas important for maintaining natural resources (e.g., fishes, invertebrates, etc.) and ecosystem functions." (FKNMS 2000).

Management zones encourage multiple uses and can be used to accommodate the conservation, economic, recreational, subsistence and development needs of the human community associated with the site. Differing types or levels of zoning designation can provide flexibility in the management strategy for a large and complex site, such as OCNMS. The types of zoning recommended depend on the legislative basis, specific goals, and local conditions associated with a site. Although zoning can include a variety of recommendations at differing levels of protection, the overall goal of zoning is to provide integrated management of a large area and site specific management appropriate to different parts of the management area.

4.0 Area of Interest

These purpose and mission statements clearly identify that the MCWG was tasked with and limited to review of zoning for intertidal areas within OCNMS. Intertidal was considered by the MCWG to include the shore between extreme low water (ELW) and extreme high water (EHW), which includes all of the shore covered and exposed by the sea throughout the year. The MCWG was not asked to evaluate zoning in offshore waters, areas outside the sanctuary boundaries, tribal reservations, or portions of the sanctuary or Olympic National Park other than the intertidal shore. The jurisdiction for intertidal areas is summarized in Figure 2 and discussed in more detail in Section 5.0.

4.1 Federal Areas

OCNMS extends along approximately 135 miles of coast from Koitlah Point, just west of Neah Bay, Washington, in the western Strait of Juan de Fuca, to the Copalis River on the outer coast of the Olympic Peninsula (Figure 1). The offshore boundary of the sanctuary follows the international border at the north and approximates the 100 fathom (600 foot) depth contour of the continental shelf. The coordinates and boundaries of OCNMS are described in 15 CFR Part 925 (Federal Register 1994).

Jurisdiction of intertidal areas on the outer or western Olympic Peninsula is complex, with several entities owning and holding management authority over differing divisions on the shores and associated resources (Figure 2). OCNMS, with authority derived from the National Marine Sanctuaries Act, has jurisdiction of the aquatic resources and habitats from approximately the 100 fathom isobath to the mean higher high water line adjacent to federal lands. Where OCNMS is adjacent to Indian reservations, state, county and privately owned lands, the sanctuary boundary is the mean lower low water line. Options developed by the MCWG and contained in this report will address only intertidal areas under federal jurisdiction.

Other federal agencies with ownership and jurisdiction over coastal lands are ONP and the US Fish and Wildlife Service (USFWS). The coastal strip of ONP extends for approximately 65 miles (105 km) between the Quinault Reservation on the south and the Makah Reservation on the north (Figure 1). ONP has jurisdiction of aquatic resources and habitats extending from upland areas to the extreme low tide, except for intertidal areas on the Hoh, Ozette, and Quileute reservations. USFWS has jurisdiction over all land above the mean high tide line within Flattery Rocks, Quillayute Needles, and Copalis National Wildlife Refuges, collectively called the Washington Islands National Wildlife Refuges (WINWR) (Figure 1). Offshore rocks and islands north of the Quinault Reservation lie within ONP but the uplands portions of these lands are

refuge lands managed primarily by USFWS. Thus, within the boundaries of OCNMS three federal agencies have a degree of overlapping jurisdiction over the intertidal areas.

4.2 Tribal Reservations and Usual and Accustomed Areas

Intertidal areas of tribal reservation lands were not included in the area of interest considered by the MCWG. The Makah, Quileute, and Hoh Indian Tribes and the Quinault Indian Nation have reservation lands adjacent to federal lands and waters within OCNMS and ONP (Figure 1). On tribal reservation lands, sovereign tribal ownership and jurisdiction extends to mean lower low water in intertidal areas. Tribal interest and co-management authority for fishery resources, however, extends beyond reservation boundaries to include usual and accustomed (U&A) grounds that were defined for each tribe in the Boldt decision (U.S. v. Washington 1974), have been reaffirmed in subsequent related decisions, and continue to be re-evaluated. Treaties between the U.S. federal government and coastal tribes were made nearly 150 years ago and are still in full force and effect today. Through these treaties, the tribes reserved rights to gather fish and shellfish in perpetuity at all U&A grounds and stations, including intertidal areas of federally managed lands. Further, the Boldt decision and subsequent U.S. V. Washington court proceedings affirm the rights of the tribes to co-manage the fishery resources within their U&A areas. The tribes rely on these U&A grounds for subsistence and a moderate living from the fishery. In addition to tribal gatherers and fishers, Tribal scientists and staff require access to the intertidal zone to survey, sample, and conduct work in support of resource management. Management measures, such as restrictions on collection of intertidal species from federally managed intertidal areas, can not infringe on tribal treaty rights unless a conservation necessity exists and measures undertaken first by non-tribal members are not sufficient to prevent the destruction of a particular species. Consequently, new management measures to restrict intertidal gathering, if implemented, will be applicable only to non-tribal persons, unless they are adopted independently by a tribal government (see Section 5.1).

4.3 State-Managed Areas

South of Olympic National Park and tribal reservations, the State of Washington has jurisdiction over tidelands adjacent to the sanctuary. The shore south of the Quinault Reservation south to Grays Harbor are publicly owned tidelands designated as the Washington Seashore Conservation Area (WSCA). Washington State Parks and Recreation Commission has management authority for the WSCA, with jurisdiction extending from uplands areas to mean lower low tide (Figures 2 and 3). The State also has jurisdiction over waters and submerged lands and the associated resources out to three miles, as identified in Figures 2 and 3. In addition, the State has jurisdiction over public health aspects of all resources gathered from state waters, landed into the state, or commercially harvested from state or private tidelands. Consequently, Washington Department of Health is responsible for shellfish closures due to biotoxins where there is state jurisdiction of beaches.

5.0 Existing Intertidal Zoning

5.1 Jurisdiction and Land Ownership

As described in Section 4.0, the shores of the outer Olympic Coast are an area of complex and overlapping ownership, where jurisdiction is held by tribal, federal, and state agencies (Figure 2). The zoning and regulations associated with different areas is a function of jurisdiction and land ownership.

5.1.1 Tribal Adjacent to OCNMS are the Makah, Ozette, Quileute, Hoh, and Quinault Indian Reservations. Native American tribal reservation boundaries extend from upland areas to mean lower low water in the intertidal area. Within these reservations lands, the tribes have sole ownership and management authority for natural resources and have established regulations related to tribal and non-tribal activities. Intertidal zoning on reservation lands was not considered by the MCWG. Recommendations in this report fully acknowledge the sovereign authority of the tribes on reservation lands and their treaty rights to 50% of the fishery within U&A grounds of the Makah, Quileute, and Hoh Tribes and Quinault Nation, specifically including their commercial, ceremonial and subsistence use and co-management of off-reservation intertidal and subtidal fishery resources. Tribal treaty rights and interests extend to all marine areas where the tribes have traditionally hunted and fished, and they are further described in the Code of Federal Regulations and decisions of the federal courts.

The entire shoreline adjacent to OCNMS is the U&A grounds for one or more of the tribes. In no way are the MCWG's recommendations intended, overtly or inadvertently, to limit a tribe's rights, nor is this deliberative process a replacement or substitute for government-to-government consultations between OCNMS and the tribes.

It is important to recognize that the four tribes mentioned herein all make their own regulations. In fact, the Quinault and Quileute are recognized by the State of Washington as self-regulatory pursuant to U.S. v. Washington. All four governments and their staff participate in federal and state fishery management planning, and they participate in management activities in order to assess the coastal resources.

5.1.2 Federal The Olympic National Park (ONP) has land ownership and jurisdiction of aquatic resources and habitats extending from upland areas to the extreme low tide, except for intertidal areas adjacent to the Hoh, Ozette, and Quileute reservations. ONP has the authority to establish intertidal collection regulations on ONP lands and in May 2003 published a revised set of regulations covering fish, invertebrates, and algae (ONP 2003) that are reviewed below in Section 5.2. The US Fish and Wildlife Service (USFWS) has ownership and jurisdiction over all land above the mean high tide line within Flattery Rocks, Quillayute Needles, and Copalis National Wildlife Refuges (Figures 1 and 2). The USFWS also implements the Endangered Species Act and Marine Mammal Protection Act, in coordination with OCNMS, within the boundaries of OCNMS. The National Marine Fisheries Service (NMFS) implements the Endangered Species Act, the Marine Mammal Protection Act, and the Magnuson-Stevens Fishery Conservation and Management Act in coordination with OCNMS within the boundaries of OCNMS. OCNMS, through the National Marine Sanctuaries Act, has jurisdiction of the aquatic resources and habitats from approximately the 100 fathom isobath to the mean higher high water line adjacent to federal lands. OCNMS has permitting authority over any activity that is prohibited by site-specific regulations, including overflights below 2000 feet within 1 nm of the coast or national wildlife refuge islands, oil exploration and drilling, extraction of ocean minerals, alteration of the seafloor with the exception of traditional fishing practices, and discharge and deposit of materials (Federal Register 1994).

5.1.3 State For intertidal areas outside the Olympic National Park and tribal reservations, the State of Washington has jurisdiction over waters, publicly owned tidelands and submerged lands and their associated resources out to three miles. There are two privately owned parcels near the Moclips River that were deeded before statehood. On these privately owned tidelands, the clams, oysters and mussels are considered private property and not subject to state jurisdiction regarding collection limits. However, the right of treaty tribes to access private tidelands for shellfish

collection was reaffirmed in the U.S. v. Washington subproceeding called the Rafeedie decision after the judge (898 F. Supp. 1435 W. Dist. Wash. 1995) and subsequent court decisions. The State also has jurisdiction over public health aspects of all resources collected in state waters, landed into the State, or commercially harvested from state or private tidelands. For fisheries between three miles and two hundred miles, the State manages all species for which there is no management plan under the Pacific Fishery Management Council, and those for which the appropriate plan delegates management to the State. Tribes have co-management authority for these resources also. In addition, the State can control all landings into Washington State regardless of where the catch was taken.

5.2 Collection of Intertidal Organisms

Intertidal areas on the outer Washington coast, including ONP marine shores, are open to ceremonial and subsistence gathering and managed commercial harvest by tribal members within usual and accustomed areas for each tribe, an indelible right guaranteed in treaties with the federal government.

The non-tribal food collection on federal shores under consideration by the MCWG is restricted under ONP regulations to state "classified" fish and shellfish species. Revised ONP fish and shellfish regulations were issued May 1, 2003 (Figure 3, ONP 2003). The few classified invertebrate species found on the outer coast shore for which collection is allowed include mussels (blue and California), gooseneck barnacles, several species of hardshell clams, and razor clams. Non-tribal collection of these species is currently restricted to 5 months a year during the winter due to biotoxin hazard, except razor clams which are an actively managed stock that supports a popular recreational fishery typically open only a few days each year (Figure 3). Razor clam gathering may be closed at any time, however, if toxin levels exceed established the threshold. Infrequently, Dungeness and red rock crab can also be found in and collected from intertidal areas. All other non-tribal collection is prohibited on both ONP and Washington State Park and Recreations Commission (WSPRC) lands. ONP and WSPRC regulations prohibit gathering of seaweeds and unclassified species, which include common beach and tidepool animals such as chitons, starfish, snails, anemones, and shore crabs. ONP regulations for marine water fishing are consistent with state regulations that allow fishing year-round (except for lingcod) with no minimum size and a daily limit of 15 surf perch or 10 pounds combined total of surf smelt, sand lance, anchovy, herring, or sardines (ONP 2003). Collection of any organisms for use as bait is prohibited from ONP beaches.

A combination of factors contributes to human health risk associated with the current system for managing bivalve collection and consumption on outer coast beaches. Filter feeding bivalves routinely accumulate levels of biotoxins that are harmful to human health. Levels of biotoxins in bivalves on many beaches of the outer coast are not monitored routinely, and toxin levels can vary significantly from beach to beach and from species to species. It is difficult, therefore, to effectively monitor biotoxin levels and inform the multitude of day visitors and backcountry users about both the current health risks and the Park's regulations for food collection on the coast. Consequently, the management solution has been to restrict non-tribal bivalve and gooseneck barnacle gathering to five months a year, during the winter when the risk of shellfish poisoning is low.

Because of the importance of shellfish to tribal subsistence, tribal staff regularly monitor shellfish for biotoxins on beaches within their U&A areas as well as on their reservations. They work with state (WDOH) and federal (NOAA) agencies in the testing and publication of monitoring results.

For example, Quileute staff collect clams from Kalaloch and Second Beach for biotoxin monitoring, testing that is currently funded by NOAA and BIA.

5.3 Other Zoning on Public Shores of the Outer Coast

Existing OCNMS, ONP, and WSPRC zoning regulations that apply to a variety of activities in intertidal areas are summarized in Table 1. In addition, zoning of various sorts has been developed by Tribes to apply to reservation lands. For example, the Makah Tribe has designated an area, the Cape Flattery Coastal Wilderness Area, where no motorized vehicles or logging are allowed. Quileute's First Beach is open to the public but has restrictions regarding open burning, non-tribal use of beach logs, parking, driving, and fishing. Other regulations and zoning have been designated on other tribal lands.

5.4 Evaluation of Existing Zoning

MCWG participants reviewed the effectiveness of existing zoning in the context of discussing the current understanding of impacts to intertidal areas, as well as analysis of future potential threats and impacts. To a large extent, existing zoning and management approaches were considered effective to address current visitation levels and interests. Identified negative impacts of visitors to intertidal areas were highly localized, relatively few, and currently being addressed through management. It was recognized, however, that this is a measure the effectiveness of existing management and the resilience of the coastal habitats, as well as the scarcity of specific data on visitor impacts. For reasons articulated in Section 8, the MCWG proceeded with development of proactive intertidal zoning options, to prevent future degradation of habitats and biodiversity and to minimize damage that could occur before it was readily detected.

6.0 Brief Overview of the MCWG Process

The MCWG held sixteen meetings between April 2000 and February 2003. An outline of meeting topics and dates and a listing of MCWG invited participants is provided in Appendix A. In brief, the MCWG's activities can be summarized as:

- establish ground rules,
- outline public involvement, outreach and communications goals and objectives
- review marine zoning and protected areas science, theory and practice at other sites,
- summarize existing ownership, jurisdiction, and zoning on Washington's outer coast shoreline,
- draft a vision statement and goals
- gain familiarity with the ecology of the outer coast, including oceanography, intertidal habitat, and organism distribution,
- identify sites of extraordinary ecological significance and highest priority for conservation
- summarize current and potential threats to habitats, organisms, and area aesthetics, and
- develop options for augmented protection through intertidal zoning.

More details about the process and outcome of the deliberations are provided below.

Table 1. Existing Intertidal Zoning Regulations on Public Shores Adjacent to the Olympic Coast National Marine Sanctuary

Agency	Intertidal Zoning Regulations
Olympic Coast National Marine Sanctuary	Overflights below 2000 feet altitude are not allowed with one mile of shore or offshore rocks and islands.
Olympic National Park	Pets are allowed on the beach at Kalaloch (Ruby Beach to South Beach) and Rialto Beaches (north to Ellen Creek) and must be on a leash.
	Recreational gathering of razor clams is allowed only at Kalaloch Beach and is intensively managed.
	North of Ruby Beach, the ONP coastal strip is a wilderness area; south of Ruby Beach is not designated as wilderness.
	Backcountry permits for overnight camping are issued on a limited basis for Cape Alava.
	Beach fires are prohibited in the area from Cape Alava to Yellow Banks.
	Fires are allowed on the beach but must be more than 10 ft. from drift logs and less than 3 ft. in diameter.
	Shellfish gathering from all ONP beaches requires a Washington state license.
	Landing of motorized boats is not allowed on Park marine shores.
	Horses, bicycles, and motorized vehicles are prohibited on all ONP beaches.
Washington State Parks	Beach fires are not allowed among drift logs.
	Use of drift wood from the beach for fires is prohibited.
	Collection of unclassified species and seaweed is prohibited.
	WDFW regulations limit vehicles and horses to upper beach (150 feet waterward of extreme upper limit of the hard sand area)
	Motorized traffic allowed on beach during the winter, but prohibited between April 15 and day after Labor Day.
	Aircraft can land and take off on ocean beach between the Copalis River and Copalis Rocks (approx. 1.5 miles of beach adjacent to OCNMS).
	Wind/sand sailors, parasails, and hovercraft are prohibited from the beach.

7.0 Vision Statement and Goals

Early in its deliberations, the MCWG developed a vision statement to gain a clearer understanding of the reasons for proceeding with the evaluation of intertidal zoning. In the case of the OCNMS shoreline, the motivations for this evaluation were somewhat atypical. Contrary to similar zoning processes at other locations, the MCWG was not responding to depleted intertidal resources or aesthetically impacted habitat. The MCWG discussed the value of intertidal zoning not as a means to restore damaged habitat and depleted species, but rather as a measure to prevent impacts that could occur in the future with the anticipated increase in human visitation. It was approaching the issue of intertidal zoning before significant damage had been documented. It was being proactive.

By considering management more restrictive than currently exists, the MCWG was motivated largely by the precautionary approach, which has been described as application of prudent foresight, taking account of the uncertainties in ecosystems, and the need to take action with incomplete knowledge (FAO 1996). It is acting to avoid serious or irreversible harm, despite lack of scientific certainty as to the likelihood, magnitude, or causation of that harm. Simply put, the precautionary principle can be summarized as "when in doubt, err on the side of conservation" (Sissenwine and Mace 2001).

The **precautionary principle** or precautionary approach is a response to uncertainty in the face of risks to health or the environment. It involves acting to avoid serious or irreversible potential harm, despite lack of scientific certainty as to the likelihood, magnitude, or causation of that harm. Precaution is now an established principle of environmental governance, prominent in law, policy and management instruments at domestic and international levels, across such diverse areas as pollution, food and sanitary standards, fisheries management, and wildlife trade. (www.pprinciple.net)

For much of the OCNMS shore, demonstrable impacts of human visitation on intertidal communities may not be obvious. The absence of demonstrable impacts or need to promote recovery of damaged areas, however, should not negate support for stronger management for conservation. A precautionary approach to site management, particularly when applied to federally protected areas, can be justified by numerous examples from throughout this country and the world where humans have caused serious degradation to coastal marine environments while under management by well-developed regulatory authorities (see Section 10). The MCWG considered management actions to ensure that the wild, diverse, and productive habitats and populations remain so on Washington's outer coast, management consistent with USFWS, ONP and OCNMS policies, legislative mandates, and long-term management responsibilities.

The vision statement developed by the MCWG reads as follows.

> The Marine Conservation Working Group recommends zoning for intertidal areas of the OCNMS to conserve marine biodiversity, to sustain natural marine populations and habitats, and to foster stewardship in the OCNMS by
> 1) defining locations for and types of intertidal zoning that establish appropriate protective measures, including a network of intertidal reserves,
> 2) researching the effects of intertidal zoning,
> 3) establishing areas for research and for monitoring long term trends in intertidal zones, and
> 4) educating the public about marine conservation.

This vision was further clarified and elaborated in an overarching goal and nine additional goals.

The overarching goal is to protect the biological diversity of the intertidal ecosystem.

Additional goals are:

1. To protect a variety of representative habitats and associated species.
2. To consider the conservation needs of special groups of organisms, such as species with complex life histories and keystone species, and unique habitats.
3. To preserve and protect the cultural, aesthetic, and historic resources.
4. To preserve the cultural uses and resources of indigenous peoples.
5. To encourage education and interpretive activities at appropriate sites, while minimizing human disturbance.
6. To foster a stewardship ethic so that people can understand and experience the value of habitat management and conservation practices for marine wilderness areas.
7. To provide reference and research sites for analysis of ecosystem changes over time.
8. To provide sustainable populations of harvested species, while minimizing economic disruption to stakeholders.
9. To provide tools for evaluating the effectiveness of management policies and practices.

8.0 Justification for Considering Intertidal Zoning

Through the MCWG, existing intertidal zoning and new zoning options were considered for federal shores of the west coast of the Olympic Peninsula to provide effective protection for natural resources while maintaining opportunities for a wide variety of area use. In effect, zoning supports management of an area for multiple uses. Zoning allows selected areas to be open to recreational activities that might degrade natural resources, while other areas have restrictions on activities that are considered threats. One goal of this intertidal zoning analysis was to protect selected areas from incremental degradation that might not yet be obvious and very likely will be difficult to detect or quantify until significant damage has been done. In addition, it was an effort to protect intertidal populations and habitats against threats that could increase in the future if trends in visitor use levels continue to follow increases in the regional population, as well as new threats that might develop as new recreational interests evolve.

Justifications for strengthening management for conservation purposes and creating limited areas of harvest closure in intertidal areas can be summarized as follows:

OCNMS, ONP, and USFWS mandates. A fundamental mandate shared by these agencies is the long-term protection from degradation of the environment, natural resources, and aesthetic, cultural and educational qualities of federally managed areas. Such qualities led to federal designation of the area as a national park, wildlife refuge, and marine sanctuary. Moreover, Olympic National Park has gained international recognition as a Natural World Heritage Site, designated by United Nations Educational, Scientific and Cultural Organization (UNESCO) for its superlative natural beauty and outstanding ecological value. The federal agencies have the responsibility to manage visitors so that these qualities are not diminished over time.

Increasing regional population and visitation levels will require effective and proactive management to minimize negative impacts. Degradation of intertidal habitats and natural

resources has occurred at many popular sites throughout the region, country, and world (see Section 10).

Precautionary approach. In anticipation of impacts associated with increased visitor use, managers could defer response until a crisis or diminished resources (i.e, organisms and habitat quality) are identified, or they could to implement proactive management actions to prevent or minimize degradation. A precautionary management approach is consistent with USFWS, ONP and OCNMS policies, legislative mandates, and long-term management responsibilities.

Wilderness aesthetic is an important component of visitor enjoyment. A recent survey conducted for ONP confirmed that visitors expect park management to focus on preserving the ecosystems and wilderness qualities (Ormer et al. 2001). 95% of ONP, including the coastal strip north of Abbey Island, is congressionally designated wilderness. Visitors anticipate more restrictive regulations within a park because they recognize that they are necessary to preserve the natural aesthetic qualities that people have come to appreciate.

Minimal change from current regulations. Current ONP regulations include zoning to provide specific protections in limited areas or seasons (e.g., beach fire prohibition in the Cape Alava/Sand Point area, summer closure for clams and mussels, and year round prohibition of unclassified marine invertebrates[1] collection). National Park visitors generally are accustomed to regulations implemented to protect natural resources. With comprehensive zoning, recreational opportunities will exist in some areas and be more limited in others to preserve the wilderness aesthetic.

Ocean resources are limited. Ocean resources are neither boundless nor infinitely resilient, as was widely believed until recent years. In fact, environmental news is filled with recent findings of depleted resources and damaged habitats (Jackson et al. 2001, Myers and Worm 2003). With this new understanding, proactive and protective management practices more easily gain public support.

Marine reserves have known benefits. Benefits include increased understanding of marine ecosystems and their management, sustained biodiversity, control sites for studies of natural and human-induced disturbance, and better estimates of intrinsic population parameters that contribute to more effective fisheries management. Also, ecotourism can be stimulated and aesthetic quality maintained at marine reserve sites. It is acknowledged, however, that marine reserves are not effective protection for all threats (i.e., oil spills, climate change).

In essence, by designating a set of intertidal use zones on federal shores we will be conducting a management experiment, one that demonstrates proactive site management; yet a given outcome cannot be ensured. As a result, long term monitoring of intertidal zones will be essential to evaluate their effectiveness and to maximize the conservation potential of sites. Monitoring can provide critical information about compliance with and the ecological effects of zone designations, and it is considered an indispensable aspect of management response to regulatory change (e.g., Agardy et al. 2003). With increasing frequency, both commercial and recreational

[1] Unclassified marine invertebrates, also known as non-game marine invertebrates, are organisms that have not been designated by the Washington Department of Fish and Wildlife (WDFW) as a foodfish or shellfish and are not managed by the WDFW. This includes the majority of marine invertebrates, such as amphipods, sea anemones, barnacles, crabs, chitons, worms, seastars, nudibranchs, sand dollars, and shelled snails.

collection of marine organisms have been identified as root causes of disruption to marine ecosystems. Consequently, marine reserves, or no-take areas, are receiving a phenomenal amount of public attention and government support, which creates a favorable climate for funding studies of reserve effectiveness.

An additional motivation for establishing and monitoring intertidal zoning is to improve our understanding of natural processes and basic life histories of intertidal organisms. The OCNMS ecosystem is diverse, complex, and difficult to access; many of its processes and their interrelationships are not well understood. Selected areas where human disturbance is minimal are rare, even along the expansive continental shelf, and they can serve as control areas for scientific studies and provide a tool to distinguish between the effects of human activities and natural variability. Better understanding of ecosystem function can be used to inform natural resource management. Areas where organism collection is prohibited for an extended period can provide scientists and managers with unique information about the age distribution, community structure, and ecological process as they occur without harvest pressure. Ultimately, the design and effectiveness of management strategies are improved when there is a better understanding of biological and physical processes at intertidal areas, and management decisions are based on the best available scientific information.

Although existing impacts of visitation on the federal shores are not yet widespread or obvious, the current high level of visitation in some locations and the proximity to Puget Sound's large population center enhances the area's susceptibility to visitor impacts. A single newspaper article could rouse a flood of visitors in search of a wilderness bouillabaisse prepared from fresh and self-gathered ingredients. Before management was aware or could respond effectively, large areas of rocky habitat could be scraped clear by mussel and gooseneck barnacle collectors with a newfound passion for wilderness cuisine. Other changes, such as the recent publication of the opening of the restored Shi Shi Beach trail, could also bring rapid changes to the numbers and ways that visitors come to enjoy the coast.

By its very nature, the remote outer coast of Washington is management challenge. As a designated wilderness area, it is against regulations and also inappropriate to erect numerous and widespread signs to inform visitors of appropriate etiquette and site-specific regulations. In addition, the extensive stretches of shoreline and distance from the road make it impossible to have frequent enforcement or interpretive presence over large areas. Visitors are commonly on their own, out of sight of the authorities and often unobserved by any other humans. Consequently, zoning that is clearly communicated to visitors and is designed to provide high levels of protection for selected sites while allowing for a variety of visitor activities in differing areas can be an effective means of managing such a large area.

Broad recognition for the unique natural values and conservation significance of the outer Olympic Coast has been provided by an international organization that works to facilitate cross-border, marine conservation efforts. The North American Commission for Environmental Cooperation recently selected this area as a Priority Conservation Area. This selection was officially adopted on June 23, 2003, by a tri-national committee headed by the Minister of the Environment (Canada), the Secretary of SEMARNAT (Mexico), and the Environmental Protection Agency Administrator (USA).

9.0 Intertidal Habitats and Nearshore Ecology of the Sanctuary

A basic understanding of the ecology of the outer coast was a necessary foundation for effective evaluation of potential changes to existing management and zoning. To gain greater familiarity with the coast's ecology, the MCWG hosted presentations from several regional experts on coastal ecology, including Dr. Carl Schoch (nearshore habitat), John Wullschleger (ONP biological monitoring), Doug Simons (razor clam biology and management), and Dr. Barbara Hickey (coastal oceanography) (see Appendix A for a meeting outline/timeline). These reviews revealed a dramatic inconsistency between the wealth of information that is available and the lack of comprehensive understanding humans have for various aspects of marine ecosystems.

9.1 Habitat

The geology essentially defines the intertidal habitat. The shoreline north of the Hoh River is dominated by rock, headlands, bluffs, cobble and gravel. South of the Hoh, the coastline is predominantly shallow sloped, sandy beaches, with a few sandstone formations. One reason the MCWG was directed to focus on intertidal areas is because a comprehensive and detailed database exists that characterizes the shore's habitats and selected biological parameters. The foundation for these data is the ShoreZone Inventory completed by Washington Department of Natural Resources to provide a consistent, statewide description of shoreline habitats (Berry et al. 2001). The shoreline of Washington was mapped digitally and characterized in units of similar geomorphological characteristics according to a standardized classification system. Shoretype units were further divided into 4 tidal zones (supratidal to deep subtidal) with associated physical and biological features cataloged in the database. Physical characteristics included classification of natural habitat and man-made features, such as seawalls and jetties. Biological characteristics were described from 23 conspicuous assemblages of species that create well-defined bands across the shore. The close-range video footage from which this database was populated was taken in 1995 on the outer coast. In the ShoreZone Inventory, the approximately 135 miles of shoreline adjacent to OCNMS is divided into 138 segments that are typically 100s or 1000s of meters long.

This shoretype classification was further refined by Schoch (1999) who incorporated hydrodynamic attributes and substrate homogeneity to delineate approximately 1800 alongshore segments of shoreline adjacent to OCNMS. Schoch's alongshore segments are homogeneous at a finer scale, in the range of 10s to 100s meters long, than ShoreZone units. Alongshore segments were further delimited into across shore subzones, similar to WDNR's tidal zones, based on daily immersion time for substrate and associated biota. A database generated from this work includes site-specific data on the biological community within each alongshore segment and subzone. A central thesis of Schoch's work is that within a larger region, the biological community will be similar at sites where shoretype classification and hydrodynamic properties are similar. This database was essential for identification of habitats present at different portions of the coast and for analysis of habitats included in various options developed by the MCWG.

9.2 Species Distributions

Site specific data for species distribution and biological community description was available from the ShoreZone Inventory, Schoch's work, and Olympic National Park intertidal monitoring studies. The ShoreZone Inventory has broad scale distribution data for dominant macroalgae species, barnacles, mussels, surfgrass, and eelgrass linked to shoretype units. Schoch's database includes monitoring data for selected species, primarily presence/absence, and also allows a user to infer the biological community at an alongshore segment based on the hydrodynamic properties and shoretype classification. Since 1988, ONP has conducted regular intertidal biological monitoring at 17 sites in sand, cobble, and rock substrates. This database is an extraordinary, long-term record of species presence and diversity at selected sites. In addition, ONP has monitored beaches for surf smelt spawning activity in recent years. In combination, these data sets allow one to make well-informed assumptions about the species composition at any location along the outer coast between the Copalis River and Neah Bay (Figure 4).

One generalization that can be made from these data is that rocky intertidal areas on the outer Olympic Coast have higher biodiversity (numbers of species and organisms) than sandy areas. Moreover, in studies at over 50 rocky intertidal sites that span 1,200 miles of coast from California to Washington, the highest biodiversity was found at sites in Washington (PISCO 2001). Thus, rocky intertidal areas on outer Olympic Peninsula shores have extraordinarily rich communities in terms of variety of species and abundance of organisms.

9.3 Currents and Circulation

The oceanographic regime of Washington's outer coast has been characterized at a broad scale. In comparison to Oregon and California, however, oceanographic processes off the outer Washington coast have received less study, primarily because oil exploration and drilling promoted much of this research and this activity has not progressed off Washington. Major features influencing the area's oceanography include wind driven currents, submarine canyons, outflow from the Columbia River, coastal estuaries, and the Strait of Juan de Fuca. Basically, Washington's coast is dynamic, with highly variable circulation patterns in offshore and nearshore areas.

Two dominant oceanographic patterns occur off the outer coast of Washington.[2] In summer or any good weather, winds are typically northerly and surface currents move south and slightly offshore. The offshore movement of surface waters causes upwelling and brings cold, nutrient rich, and salty water to the surface along the coast. Estuary plumes with low salinity and turbid waters generally flow to the southwest. In winter or any bad weather, winds are southerly. Surface currents move north and towards the coast, which results in downwelling near the coast. Warmer water remains at the surface, and estuary plumes stay against the coast. The dominant pattern can shift rapidly with weather changes, for example every few days. Most upwelling occurs within 10-20 km of the coast, and the strongest offshore flow occurs in the upper 10 m of the water column. Surface currents can move rapidly and can transport suspended and floating material quickly. For example, drifter buoys have been tracked from the Columbia River to the Strait as fast as 1.5 days, although this represents an extraordinary event (B. Hickey, University of Washington, personal communication).

[2] This review of oceanography off the Washington coast is based on a lecture presented to the MCWG by Dr. Barbara Hickey, School of Oceanography, University of Washington, in Seattle, Washington, on October 12, 2000.

Water upwelling to the Washington coast comes primarily from the California Undercurrent which in the summer flows northward along the entire coast from Mexico to Washington, with a maximum flow rate at about 200 m depth. This is a narrow (~20 km) subsurface undercurrent that flows along the upper continental slope. In the winter, the Washington Undercurrent dominates with a southward flow at greater depth (400 m).

The Juan de Fuca Eddy is a semi-permanent pattern centered about 20 nm off Cape Flattery, a counterclockwise circulation fed by water flowing toward the northwest from the northern Strait and toward the east in the southern Strait. This is an offshore retention area with high pelagic productivity.

The waters of OCMNS can be considered one oceanographic region. Surface water movements off Washington are a wind driven circulation (i.e., Eckman transport) that generally occurs over a large area because weather fronts tend to be large scale. Thus, current and upwelling patterns can be similar over the entire area from Oregon and British Columbia. Nevertheless, Schoch (1999) did identify 8 major nearshore oceanographic cells within OCNMS by partitioning the water masses along gradients of salinity, water temperature, nutrients, and wave energy in the nearshore area (<10 m water depth). These nearshore cells are defined as seasonally persistent regions of uniform salinity, water temperature, nutrients, and wave energy that can be used to qualitatively differentiate regions along the outer coast. However, they are not isolated oceanographic features and open exchange of water and organisms occurs. Nor are there distinct geographic boundaries between adjacent cells. At any time of year storm events can result in a temporary but dramatic shift between dominant oceanographic patterns and disrupt persistent hydrodynamic features along the shore.

Thus, Washington's outer coast has dominant seasonal hydrodynamic patterns that influence the distribution of the planktonic propagules (i.e., free-living life stages) of intertidal organisms, but these patterns are occasionally disrupted by altered weather events. There may be periods when distribution of short-duration planktonic spores or larvae are limited to a relatively small area, but there are no distinct hydrographic boundaries or barriers to species distribution on Washington's outer coast. Recruitment success may largely be attributed to oceanographic conditions and patterns during an organism's pelagic larval phase (McConnaughey et al. 1994).

10.0 Principal Threats to Conservation and Management of the Area

The need for and types of zoning are essentially defined by the current and potential threats and impacts to the coastal ecosystem. Threats are activities with potential to negatively impact aesthetic qualities, habitat, or organisms in intertidal areas. The MCWG discussed a broad range of issues and activities, and pared the list of threats to those associated with current use of the area, or anticipated with increased visitation levels, that can be controlled through intertidal zoning. The principal threats identified were

- organism gathering and poaching,
- bait collection,
- trampling of living resources,
- wildlife disturbance,
- destructive tidepool exploration,
- souvenir collection (i.e., rocks, sticks, shells),
- erosion on sea stacks, and
- beach fires.

At some level of use, the shoreline can accommodate each of these activities without being degraded. The fundamental cause of these threats, however, and the subject that is manageable is the multitude of people; it is visitation and use that occurs in a damaging manner or exceeds an unfathomable threshold. All threats identified could be considered "depreciative behaviors", or resource damaging acts perpetrated by tourists intentionally, but not intended to be vandalism or acts effected for the purpose of damage (Alessa et al. 2003). Although indications are that severe and widespread damage has not occurred on the western Olympic coast, the risk is increasing with growing visitation levels and changing visitor use.

In the Pacific Northwest, we live in an area where natural beauty is on every horizon, where dramatic natural features are immediately accessible, and where the bounty of our environment is appreciated and celebrated by a broad spectrum of the population for a variety of personal reasons. Yet, the history of European exploration of and subsequent settlement in Washington is very short. During the past two centuries, population numbers have grown exponentially in Clallam County, while the population of Native Americans has remained relatively low (Figure 5). In the Puget Sound region, the population has doubled since 1960. The "denaturing" of western Washington habitats and ecosystems has progressed rapidly from the early 1800's when a series of small Native American villages were separated by wilderness to the present when human habitation is widespread and locally dense and there exists a well-developed regional infrastructure and economy. The secret is out, the population continues to expand, and the area continues to develop.

A growing regional population, improved access roads, and the ease of modern travel throughout the world have brought ever-increasing numbers of visitors to the outer coast of Washington. Because about 85% of ONP visitors live in the Puget Sound region, growth of the regional population has direct impact on visitation levels at ONP. Figure 6 shows the parallel increases in the Puget Sound population and ONP backcountry use, or visitor nights spent overnight camping. Today, visitation levels at ONP, including day use, are near 5 million people per year (Figure 7). A recent visitor survey, conducted in July 2000, provides insight into the interests of park visitors (Ormer et al. 2001). Over 23% of all ONP visitors go to the coastal beaches, which translates to approximately 1.2 million visitors to the park's shore each year, including day and overnight use. A large majority (81%) of visitors hiked in the park, and 29% used backcountry trails. Of the hikers, 10% or approximately 400,000 camped overnight in the park. If this percentage holds for coastal beaches, about 120,000 visitors per year camp overnight on the Park's beaches. These data are estimates based on interviews with about 1,000 visitor groups (Ormer et al. 2001).

ONP maintains a database for backcountry permit registration (i.e., overnight camping). These data confirm that coastal beaches in ONP are popular sites for wilderness campers throughout the year, and that a few sites receive a large proportion of the visitation. In fact, 40% of all backcountry visitor nights in the entire Park are tallied on the coastal beaches each year[3]. Yet, the coastal strip accounts for only 20% of the total wilderness landmass of ONP. In recent years, more than 45,000 visitor nights (sum of persons and nights camping) were reported annually for the ONP coastal areas. This is a conservative estimate because not all campers register with the Park for permits. Visitation data also indicate that backcountry use on the Park's coast is concentrated in a short season and focused on a relatively small portion of the coast. The summer

[3] Mean from 1988 to 1997 from the Olympic National Park backcountry use database. Data is summarized from permits issued for overnight camping and does not account for visitors who do not register with the Park. 'Visitor nights' is the number of visitors multiplied by the number of nights in the backcountry.

season, June-September, accounts for 70% of coastal backcountry visitor nights. Over 90% of all coastal backcountry users in ONP are centered on four entry points, Rialto, Third, and Second Beaches and the Ozette Ranger Station, where shoreline access is relatively easy via short hikes that start at paved roads.

Day use, levels of which are likely a function of ease of access, also brings tens of thousands of visitors to the shore. Unfortunately, day use levels are poorly documented because ONP does not have an accurate system to monitor day use on coastal beaches.

The following sections characterize the existing and potential threats identified above.

10.1 Organism Collection

Impacts of living organism collection from the shore for food, bait, souvenirs or other purposes are well documented and typically are manifest in decreased abundance, biological community alterations, and damage to biophysical habitat. Although current levels of organism collection are not well documented for the outer coast shores, with the exception of razor clam harvest, it is likely that this activity is more prevalent than casual observation suggests. Without extensive monitoring of intertidal communities and intensive enforcement presence, it is nearly impossible to effectively manage harvest of the multitude of preferred species along the extended shore under consideration.

Collection of marine organisms has had an undeniable impact on marine communities at many sites in the region and throughout the world. For inland marine waters of Washington State, a review of anthropogenic (i.e., of human origin) stressors and natural limiting factors affecting marine life identified thirteen species or groups exhibiting recent and substantial declines in regional population abundance (West 1997). Harvest, or collection for human use and consumption, was identified as a major stressor for most species. To a large extent, high-density human development surrounds these inland waters, and for intertidal species, habitat loss and degradation were also considered major stressors. Of particular relevance to the outer Olympic Coast is the discussion of unclassified marine invertebrates, or organisms not designated by WDFW as foodfish or shellfish and not actively managed by WDFW. These are also referred to as nongame marine invertebrates (NGMI). In Puget Sound, a sharp increase in gathering of NGMI has occurred in recent decades, which has been attributed primarily to expanding commercial markets and subsistence fishing by recent immigrants (Carney and Kviek 1991). Concern for NGMI gathering activity is heightened by the fact that collection of these species has never been monitored. West's recommendations for management of unclassified marine invertebrates included improved protection for intertidal habitats, enhanced education and outreach, encouragement for basic research, and selected areas of restricted harvest (i.e., intertidal reserves) (West 1997).

In Puget Sound, impacts of recreational gathering became apparent more than a decade ago. State biologists noted populations of once common NGMI were plummeting, and managed species also were disappearing from Puget Sound beaches (Ramer 2003). By the late 1980s, some beaches had been denuded of almost all marine organisms (Kyte 1989). This effect was more common at easily accessible parks and near major population centers, but such overzealous and under regulated collecting was spreading to more remote areas (Kyte 1989). Quantitative studies confirmed these observations. A survey of NGMI in 1990 found lower densities as well as smaller sizes of exploited species; some species were absent altogether at harvested sites in Washington (Carney and Kvitek 1991). A King County beach assessment program in the mid 1990s revealed numerous collection problems including overharvest of clams at many beaches (as

indicated by low density and small clam size), take of undersized rock crab, removal of gallons of purple shore crab and bucket loads of algae by individuals or groups, destruction of clay banks to access piddock clams, and frequently overturned boulders (http://dnr.metrokc.gov/wlr/waterres/beaches/bmain.htm). The scale of these harvest activities can be difficult for the uninformed person to imagine. For example, a study of intertidal algae gathering revealed that between 200 and 300 harvesters removed between 2,000 and 4,000 pounds of one alga, *Alaria*, each year from a small county park in Jefferson County (Norris et al. 1999). Annual gathering from 13 Puget Sound beaches in 1990 was estimated to be 8,000 gallons of algae, 74,000 shorecrabs, 119,000 *Nucella* (a marine snail), 21,000 moonsnails, 43,000 polychaete worms, and thousands of individuals of other organisms (Carney and Kvitek 1991). The simple message is that where people have access to the shoreline, collection of foodstuffs will be a popular activity. The question that remains is what levels of organism collection are sustainable?

Collection of intertidal organisms for non-consumptive purposes is also widespread. For example, in 1990 thousands of echinoderms (sea urchins, sand dollars, sea cucumbers), amphipods (small crustaceans), polychaete worms, and gastropods (snails, slugs, chitons) were collected for use by universities, private consulting firms, biological suppliers, and science centers (Carney and Kvitek 1991). The numbers collected in Washington State that were reported to WDFW were 9,000 echinoderms, 170,000 amphipods, 150,000 polychaetes, and 6,000 gastropods annually. One can assume that unreported organism collection from intertidal areas occurs also. On the black market, attractive or 'specialty' marine invertebrates, such as nudibranchs or colorful sea slugs, can bring up to $100 for each specimen. On the outer Olympic shoreline, increasing numbers of visitors can lead to an expansion of incidental collection of organisms for souvenirs. Park rangers have noted that seastars, crab, sand dollars, chitons and other shelled snails are popular organisms taken from the shore for display at home.

Increased awareness of the problem of NGMI collection and an inability to effectively manage the numerous intertidal species has led to management measures at the state and local level. In 2000, WDFW implemented daily bag limits for NGMI. Several recent studies of NGMI collection on Washington shores recommended no take areas as a means of providing protection for intertidal communities and/or an improved understanding impacts of humans on intertidal resources (Kyte 1989, Carney and Kvitek 1991, West 1997, Norris et al. 1999). On the popular city park beaches of Seattle, this has become a reality. In response to impacts from overharvesting, in July 2003 the Seattle Board of Park Commissioners unanimously approved a rule to create marine reserves at 6 city parks where taking of shellfish, capture of any wildlife species, or otherwise damaging or destroying submerged or intertidal lands is prohibited. These reserves cover approximately 50% of the shoreline of these parks.

Although the current scale of organism collection from beaches adjacent to the sanctuary is unlikely to be comparable to levels that occur in Puget Sound, there is valid justification for anticipating increased interest in collection of intertidal organisms. Kyte (1989) and a WDFW biologist (Alan Ramer, WDFW, personal communication) have indicated that problems associated with overharvest of NGMI have been found first at easily accessible areas and near major population centers, but the effort spreads rapidly to more remote areas as organism numbers at familiar sites are depleted and human mobility increases. In addition, the expanding population of Asian and southeast Pacific Islanders, who have traditionally exploited intertidal seafoods, has contributed to increased collection of NGMI in Washington (Alan Ramer, WDFW, personal communication). Also, increased familiarity with different cultures has made it more acceptable among European descendants to eat non-traditional seafood. All of these factors have contributed to increased collection pressure on organisms that have not traditionally been target

of European settlers and the increased threat of overharvest impacts on the outer coast of Washington.

Strong collection pressure can cause observable and immediate changes to a biological community, as well as alterations that are less direct and more difficult to understand. An obvious impact of gathering is decreased abundance and density of targeted species. Fewer organisms are available on popular beaches where gathering occurs. Reduced density can affect reproductive success, particularly of broadcast spawners. Many, if not most, intertidal invertebrates broadcast their gametes into the water where fertilization is a function of probability, although the success of this strategy is enhanced by chemical and physical triggers that help synchronize the release of gametes from different individuals. Decreased abundance and density can reduce fertilization success of intertidal organisms (Levitan 1991, Tegner et al. 1996).

Less obvious impacts of strong collection pressure are alteration to the diversity of communities and perturbations to the complex processes by which some species shape the biological and physical nature of intertidal habitat. For example, studies in Chile showed how human exploitation of a snail that preys on bivalves resulted in mid-intertidal areas where the snails were absent, and the biological community had developed into a monoculture of mussels (Castilla and Duran 1985; Moreno et al. 1986; Duran and Castilla 1989). Removal of collection pressure on snails in limited areas led to reestablishment of snail populations with varied age structure as well as a more diverse intertidal community. Changes to community structure also have been demonstrated to result from exploitation of mussels (Hockey and Bosman 1986), oysters (Dye 1988), and limpets (Hockey and Bosman 1986, Lindberg et al. 1998).

Another effect of strong collection pressure is the change in average size of organisms. When humans collect intertidal species for consumption, they preferentially collect larger individuals. This leaves behind smaller individuals and reduces the average body size of collected organisms. A recent study in southern California confirmed this hypothesis by comparing museum specimens of four invertebrate species with living organisms from intertidal areas (Roy et al. 2003). Living specimens from a national park with collection prohibitions in intertidal areas were significantly larger than those from other shores, and for two of the four species were larger on average than museum specimens (Roy et al. 2003). For certain species, selection for smaller body size could have significant implications. For example, some limpets and other gastropods change their sex from male to female as they age. As a result, larger individuals tend to be females, and body size declines might negatively impact reproduction in populations subject to collection pressure. Furthermore, exploitation of larger individuals can significantly decrease reproductive output and lower the probability of fertilization success because smaller individuals typically produce far fewer gametes than larger individuals.

Destructive harvest technique is another management concern associated with collection of intertidal organisms. Besides razor clams, mussels and goose barnacles are perhaps the two most likely targets of intertidal harvest from outer coast shores. These species are typically collected by scraping clear a patch of rock surface, yet recovery of denuded patches can take several years (Jamieson et al. 1999, Paine and Levin 1981). Consequently, collection pressure could quickly have destructive impacts over wide areas if this harvest is not carefully managed.

10.1.1 Current Levels of Food Gathering

The most recent data available for collection of biota from the intertidal portions of OCNMS was generated by ONP rangers through a survey of visitors conducted between February 1997 and February 1998 (Erickson and Wullschleger 1998). Collection information was obtained primarily by direct observation and informal interviews, with additional findings from ONP ranger accounts and examination of firepits for shell remains. The survey focused on qualitative information to indicate species, locations, and rough estimates of collection levels. This work was conducted at several points along the Park's coastal strip, which stretches from South Beach to Shi Shi Beach. Whereas their survey efforts were intended to capture as much information as possible, the authors emphasized that limited staff, adverse weather, and difficulties associated with surveying large numbers of scattered visitors limited the completeness of the data. Thus, the data might not precisely characterize actual collection levels, in terms of numbers or weight of organisms collected by visitors. This effort, nevertheless, does provide the most comprehensive and accurate characterization of non-tribal food gathering, in terms of species and relative levels collected.

Fishing was the most common collection activity observed, with surf perch and smelt the primary target species. Most surf fishing occurs off beaches at the southern end of ONP, between Ruby Beach and South Beach in May through September. The most popular surf perch fishing areas were Beach Trails 3 and 4. Smelt are collected in July and August from beaches at the southern end of the ONP.

One impact associated with surf fishing is collection of bait, particularly tubeworms (*Eudistylia vancouveri*). Tubeworms are an unclassified species (see Section 8.0), and their collection is prohibited in ONP. Kendrick and Moorhead (1987) observed visitors at Starfish Point at Beach 4 and determined that about 20% of visitors collected bait for fishing. During a total of 6.5 hours observation (10-minute intervals near low tides) in June-August 1986, over 34 gallons of organisms were removed from Starfish Point. The limited occurrence of hard substrate communities at the southern portion of ONP further concentrates impacts of fish bait collection at a few rocky areas. More recent reports from the Park rangers indicate that illegal gathering of fish bait continues (Keith Flanery, ONP, personal communication), but it is greatly reduced from levels noted in the mid-1980s.

Collection of bivalve mollusks other than razor clams, i.e., mussels and hardshelled clams, presumably occurs at low intensity on ONP beaches throughout the year. Approximately 3-5% of all groups contacted had or intended to collect intertidal shellfish (Erickson and Wullschleger 1998). This converts to a rough estimate of 500-1,000 people collecting hardshelled clams and mussels on ONP beaches each year. At the Ozette area alone, between 300-500 people annually may be collecting bivalves for consumption. The daily limits are 40 clams or 10 pounds in the shell for small clams (all species combined), 7 horse clams (*Tresus capax*), or 10 pounds in the shell for mussels (*Mytilus* spp.) (ONP 2003).

All Pacific Ocean beaches under state and federal jurisdiction in Washington State are officially closed to non-tribal gathering of bivalves, except razor clams, from April 1 through October 31 because of the potential for paralytic shellfish poisoning (PSP) (WDFW 2002b). Enforcement and monitoring of intertidal collecting is complicated by the fact that ONP staffing levels are low year round and reduced further in the winter when the area is open for shellfish gathering. Out-of-season collection likely occurs because peak visitation occurs in the summer, when bivalve gathering is closed, and many visitors may not be aware of regulations or concerned about the risks of shellfish poisoning.

According to Erickson and Wullschleger (1998), most shellfish gathering is incidental to other activities. In other words, most ONP visitors come primarily to experience the environment without the need to gather and consume biological resources. Most collecting occurs at easily accessible locations (Second and Third Beaches, Cape Alava and Sand Point) or remote but popular destinations for backcountry users (Point of the Arches). The authors estimated that 85% of all shellfish gathering (except razor clams) occurs at the following areas: Toleak Point to Strawberry Point, Second Beach, Sand Point (south to Yellow Banks), Cape Alava, and Point of the Arches to Shi Shi Beach, and Kalaloch Beaches.

ONP, WDFW and the Tribes actively manage razor clams on Washington's outer coast beaches. Two beach segments in or adjacent to OCNMS, Kalaloch and Mocrocks, are managed for recreational razor clam collection. Recreational collection of razor clams at Kalaloch is allowed between Brown's Point and Beach Trail #1 (approximately 3.7 miles) and at Mocrocks between the southern boundary of the Quinault Indian Nation to the Copalis River (approximately 7.6 miles). At the Kalaloch segment, which is located wholly within ONP, the park is responsible for enforcement and ONP, WDFW and the tribes are responsible for resource management. In recent years, the Quileute, Quinault, and Hoh Tribes have conducted ceremonial and subsistence collection of razor clams near Kalaloch.

Razor clams populations exhibit wide inter-annual variability. The pelagic larval stages of razor clams and oceanographic processes that influence annual recruitment are poorly understood (Lassuy and Simons 1989). Variability in spawning intensity and recruitment success is likely influenced by complex interactions of a variety of factors including food availability, water temperature, spawning success (which may be influenced by adult density), survival of larvae, and local hydrographic conditions. Basically, larvae are negatively buoyant, tend to stay in sand, but off-site distribution can be limited or significant depending on nearshore energy during their 1-2 month larval stage before they move up into intertidal sediments (Weymouth et al. 1925; McMillan 1924).

One classified species susceptible to collection impacts is goose or gooseneck barnacles (*Pollicipes polymeris*), which grow on exposed headlands and steep or moderate bedrock shores. Collecting is typically done by scraping rock to remove a clump of goosenecks, a destructive practice that leaves a bare patch that takes about 3 years to reestablish sizeable individuals (Austin 1992). This species is reportedly flavorful, and it has the potential to become a vogue species for collection by backcountry campers. On Pacific Ocean beaches, including ONP, the open season is the same as hardshelled clams and mussels (5 months between November and March), and the daily limit is 10 lbs. whole or 5 lbs. of stalks (ONP 2003).

This analysis of current intertidal harvest levels does not account for Tribal harvest for food and resource management. Tribal members are known to use a wide variety of intertidal organisms for ceremonial and subsistence purposes, as well as scientific study. Tribal treaty rights have secured their rights to collect food from their U&A areas, including tribal, federal, and state managed lands, as well as to conduct activities related to management of the resources.

10.2 Trampling

Trampling can be defined as physical disruption of substrate and attached organisms that results from human traffic in intertidal areas. Trampling affects organisms by breaking or crushing a part of or whole organism, or weakening its attachment strength or dislodging an organism. Although intertidal organisms have evolved morphological features to cope with the extreme

forces of wave action, these features often are not resistant to human foot traffic (Milazzo et al. 2002). Numerous studies have demonstrated negative impacts associated with trampling of sessile or attached organisms, including decreases in both abundance and species diversity, (e.g., Addessi 1994; Brosnan and Crumrine 1994; Zedler 1978). In studies of rocky intertidal areas in Oregon, Brosnan and Crumrine (1994) found foliose (leafy) algae, barnacles, and mussels were susceptible to trampling. At heavily trampled sites, these authors found that the intertidal community composition was shifted to an alternate state dominated by low profile algae and fewer mussels and barnacles. Although trampling can mimic natural disturbance, trampling can be a particularly severe stress at specific sites or over broad areas due to frequency and intensity of occurrence. Moreover, unlike natural disturbance, trampling tends to occur persistently at specific sites. Ease of access is a factor directly correlated to human impacts. Addessi (1994) found highest densities of visitors focused on area within 200 m radius of primary access points, and her studies demonstrated a gradient of biota disturbance associated with gradient in human use at a public shore in southern California.

Carney and Kvitek (1991) studied intertidal impacts of organized groups on outings to Puget Sound shores. Most groups had been provided instructions on beach etiquette that included replacing rocks in their proper orientation and recommendations against non-consumptive collection of organisms. This interpretive contact resulted in a high degree of compliance with instructions that reduced impacts of organism collection, but physical disturbance to intertidal habitat, organism handling, and trampling impacts were not as effectively reduced.

A pilot study to assess trampling impacts on ONP shores was conducted in 2002 (Erickson 2003). This study compared algal canopy cover, barnacles and grazing limpets at rocky platform sites classified as either “most accessible” (potentially trampled) and “least accessible” (unlikely trampled). Most accessible areas generally had less area covered by barnacles and smaller barnacles than least accessible areas. No definitive differences were noted for grazing limpets and algae cover, primarily because of high variability of the data. Additional field work is planned for the summer of 2003. This study is one of the few studies that has examined the impacts of human trampling without reliance on a manipulative experiment, meaning trampled areas were not intentionally “generated” by the experimenters. The value of this research will be to identify if measurable and statistically significant differences between sites with differing levels of human visitation can be found on a wilderness shoreline. Furthermore, the findings can be used as baseline data to evaluate if trampling impacts increase in the future.

If trampling is shown to degrade intertidal habitats, the management alternatives to reduce these impacts are to improve public awareness of trampling impacts, limit the number of visitors to the area, restrict visitation from selected areas, define sacrificial pathways over which visitors can traverse an area, or construct a walkway that keeps visitors off intertidal rocks.

10.3 Wildlife Disturbance

Human presence in intertidal areas, particularly during breeding seasons for seabirds, can disturb nesting birds. Such disturbance not only increases energy demands for adult birds on nests, it also increases vulnerability of eggs and chicks to avian predators and heat loss. A study that compared areas in Chile where human access was prohibited with open access areas showed that the presence of humans negatively affected birds throughout the year by affecting both the spatial and temporal distribution of bird use of intertidal and supralittoral (above the high tide line) areas (Cornelius et al. 2001). The largest negative impact, however, occurred during the seabird breeding season, which coincided with the highest levels of human visitation. The authors concluded that effective protection of sensitive coastal bird assemblages requires restrictions on

human access. Studies on disturbance to nesting bird colonies in Florida recommended set back distances of between 100 and 200 m to buffer sites from pedestrian and motor boat disturbances (Rodgers and Smith 1995).

In studies on the California coast, Lindberg et al. (1998) demonstrated indirect effects of human disturbance on both vertebrate and invertebrate animals. Black oystercatchers, a territorial shorebird that breeds just above the high-water mark on rocky shores, are sensitive to human presence and are rare on shores frequented by humans. Where oystercatchers forage, researchers found fewer and smaller limpets, *Lottia* spp. a preferred prey species for oystercatchers, and denser growth of fleshy algae, which is eaten by limpets. This study revealed multitrophic-level interactions that resulted from human disturbance to a shorebird.

The outer coast of Washington, with its remote shoreline, towering nearshore seastacks, and isolated islands, is well recognized as critical nesting and breeding grounds for seabirds and marine mammals. Fifteen species of seabirds nest on the offshore islands in the WINWR that lie within the sanctuary. Most of these species are sensitive to human disturbance, particularly during the breeding season (Speich and Wahl 1989). In fact, declines and abandonment of breeding areas in more populated areas of Washington have been attributed, in part, to persistent human disturbance (Speich and Wahl 1989). The primary reason most outer coast seabird colonies have remained healthy is because they are remote and subject to minimal human disturbance.

Currently listed as Endangered by Washington Department of Fish and Wildlife, peregrine falcon populations have increased since hydrocarbon pesticides were banned primarily because of their reproductive impacts on birds. Their numbers and distribution are still limited by lingering effects of pesticides and lack of suitable nesting sites (WDFW 2003). Peregrine falcons generally nest near water on cliffs, off-shore islands, and ledges on vegetated slopes. Because these falcons are sensitive to human presence near nest sites, restrictions on human access within about 0.4 to 0.8 km or 0.25 to 0.5 miles of peregrine eyries (nests) have been recommended during the breeding season, March through June (WDFW 2003).

Sensitivity of seals and sea lions to human disturbance, particularly when they are hauled out on the shore, led to guidelines in the Marine Mammal Protection Act that restrict human activity within 100 yards. The WDFW marine mammal database lists over 60 identified haul out sites on shores adjacent to OCNMS, many of which are on the mainland where visitor access is relatively easy and potential for disturbance is relatively high. Although none of these sites are established sea lion rookeries, harbor seals with young use many of these sites. The presence of humans on the shore or in boats nearby can trigger individual or mass exodus of seals and sea lions from the rocks into the water.

10.4 Other Threats

The MCWG discussed a variety of other threats to intertidal habitats and species. The following is a brief summary of issues and ideas associated with each threat.

Destructive tidepool exploration occurs when curious visitors to the shore damage organisms and habitats through their explorations. An example is turning over boulders and leaving them in a different orientation, such as upside down. Lifting and replacing boulders also crushes organisms beneath the rocks. Such behavior has been widely documented in California, Oregon, and Washington (Addessi 1994, Brosnan and Crumrine 1994, Carney and Kvitek 1991). Areas that receive numerous visitors can be subject to significant mortality and habitat degradation, even in

a single low tide series. Public education is likely the best approach to this problem, with a message that encourages exploration in a manner that minimizes the negative impacts. Recommendations under the high use zone address this issue.

Souvenir collection refers to removing from the shore natural artifacts (i.e., rocks, sticks, shells) for personal use and appreciation. At a small scale, the impacts of souvenir collection are negligible. At some undefined level, removal of these materials can alter the nature and function of our shores. Although this is not currently viewed as a problem issue, the cumulative impact of tens of thousands of visitors potentially could be significant. There are no known studies that analyze the natural economics, in terms of supply and demand, of such souvenir collection. Many questions could be asked. Over what period did a locale's collection of clam shells or drift wood accumulate, and how long do they persist on the upper beach? Wilderness aesthetics are another aspect of this analysis. How much does the persistent collection of souvenirs affect the appearance of a given beach? Does this significantly detract from the appreciation of a shore? Current ONP regulations acknowledge a natural human inclination to take a piece of nature's beauty and abundance home, and they allow each visitor to take a handful of souvenir materials each day. However, minimal impact visitation standards are consistent with ONP' regulatory mandate. As a result, two intertidal zone types (intertidal reserves and wildlife protection zones) include a recommendation that souvenir collection is prohibited from selected shoreline areas (see Section 11 and Table 2).

Sea stacks are remnants of the mainland that have been physically isolated by erosion of surrounding lands. Off the Washington coast, sea stacks typically have near vertical bedrock walls topped with a thin veneer of soil and vegetation, which may include woody plants and trees. These plants are easily damaged by foot traffic, and the thin soils are easily eroded by intense weather if the plant cover is compromised. McMillan and Larson (2002) demonstrated such impacts of rock climbing at the Niagra (New York/Ontario) escarpments and recommended that management plans include policy on rock climbing. The MCWG considered management options, such as a recommendation against sea stack access but felt that this would be difficult to manage. In consideration of a wildlife protection zone, sea stacks with significant seabird colonies or marine mammal haul areas were analyzed for accessibility from the mainland. Where easy access and wildlife use coincided, the area was included in a wildlife protection zone.

Beach fires are considered by many overnight visitors as an essential component of the backcountry experience. Beach fires become a problem when fire can spread to the drift logs or upland areas, or when the number of visitors outstrips the supply of firewood. If there is a significant demand for firewood, the physical dynamics and aesthetics of a shore can be altered by firewood removal. Between Cape Alava and Sand Point, the search for firewood has led to upland vegetation damage in the quest to augment the wood supply from the beach. Consequently, ONP has a prohibition on beach fires between Cape Alava and Sand Point. Largely to prevent such impacts at selected areas, the MCWG recommended that beach fires be limited to areas that are not included in intertidal reserve and wildlife protection zones (See Section 11 and Table 2).

11.0 Zone Types

With the principal threats identified as organism gathering (for food, bait, or souvenir), trampling, destructive exploration of tidepools and seastacks, wildlife disturbance, and beach fires, the question MCWG considered was how and where zoning might be applied to minimize these threats or their impact on the intertidal environment. The MCWG's deliberations were influenced

by a variety of considerations including visitation levels, known and anticipated visitor impacts, accessibility, enforcement presence, and current collection levels. In the end, three zone types emerged from the discussions: 1) intertidal reserves, 2) high use zones, and 3) wildlife disturbance zones. Each of these zone types and options for their application is discussed in the following sections. For much of the coast, the existing management was considered adequate and appropriate, and no new zoning recommendations were made by the MCWG. Areas of discussion that did not result in intertidal zoning recommendations are reviewed in Section 11.5.

Although the MCWG was established with the goal of achieving consensus on its recommendations to the OCNMS Advisory Council, it was clear early in the process that there was a range of opinions within the group about the need for potential zoning changes. In particular, options related to restrictions on organism collection (i.e., intertidal reserves or no-take zones) were not supported by all group participants. Fundamental questions were raised about 1) the need for more restrictive zoning in the absence of demonstrated damage to natural resources, and 2) the immediate as well as broader implications of potential harvest restrictions on tribal treaty rights. In the end, the MCWG acknowledged that all participants could not support all zoning options developed by the group. Nevertheless, all participants at final meetings did agree that valuable information had been generated through their discussions, and that it was important to forward a comprehensive report to the Advisory Council.

To capture the range of opinions expressed, the MCWG developed a polling process to record the views of active participants so that reviewers of this process could be informed about reasons there was both support and opposition to zone types and recommended locations developed through this process. The polling method and results are discussed below for each intertidal zone option.

11.1 Intertidal Reserve Zone

Much of the MCWG's discussion centered on zoning to minimize widespread impacts associated with organism collection for food or bait. Given the special status of the coastal area of interest as a national park, national marine sanctuary, national wildlife refuge, and international natural world heritage site, there was heightened interest in long term protection of biodiversity, habitat integrity, and sustainable populations of wild organisms, as recognized in the goals outlined by the MCWG.

Although presentations to the group provided a broad introduction to coastal ecology, the MCWG was comprised of individuals with a variety of backgrounds, including land use policy analysts, government agency managers, recreational visitors, residents, commercial fishers, and scientists. To develop a starting point for site selections, the MCWG decided to solicit advice from regional experts with personal experience researching Washington coastal ecology.

11.1.1 Expert Advice - Technical Advisory Panel

At the request of the MCWG, the SAC Research representative, Carl Schoch, coordinated a small group of coastal ecologists named the Technical Advisory Panel (TAP) that met in early March 2001. The TAP was asked to identify sections of the shoreline that have extraordinary ecological significance, could be important as source areas for organism distribution (areas that might export larvae and algal spores), could be considered the most critical portions of the coast deserving of protection, and are representative of the variety of habitats found on the coast. The TAP based their site selection on habitat data, personal knowledge of the shoreline, expertise in marine conservation, and knowledge of larval distribution and species life histories. For this analysis, the

TAP ignored land ownership and focused solely on habitat and ecological considerations. As a result, their recommendations included intertidal areas on ONP as well as tribal reservation lands. Their recommendations were provided to the MCWG in a summary report in March 2001 (OCNMS 2001).

The TAP established a rating scheme to facilitate decisions, to provide prioritization to selected sites, and to identify alternative recommendations. The rating categories were 1) not recommended at this time, 2) reserve recommended-low priority site, 3) reserve recommended-moderate priority site, 4) reserve recommended-high priority site. Their process began with consideration of relatively rare habitat types and proceeded towards the selection of larger ecological complexes. These initial deliberations resulted primarily in the selection of rocky shores and prominent headlands because of their high biodiversity and their potential to serve as source sites for larvae of intertidal organisms. The TAP next evaluated sandy and gravel habitats specifically for their hardshell and razor clam resources, species that are targeted for collection but not found on rocky shores. In their final recommendations, the TAP produced a network encompassing 24% of the shoreline adjacent to the sanctuary as high priority sites for conservation, 14% for moderate priority sites, and 6% for low priority sites. The high priority sites were recommended to the MCWG for consideration as a core no-take or intertidal reserve network. The remaining moderate and low priority sites were recommended for possible inclusion in the no-take reserve network or a series of other zoning options to be deliberated by the MCWG. The MCWG used the TAP recommendations as a base map on which to overlay legal and jurisdictional issues and management feasibility for development of their own recommendations.

It should be noted that these recommendations caused significant controversy and were alarming to each of the outer coast Tribes. The TAP report included ideas for management of intertidal portions of Quinault and Makah tribal reservation lands, which are owned and managed by the sovereign tribal governments. Although the TAP did not intend their recommendations to be anything more that a general framework for further management consideration by appropriate groups, the inclusion of reservation lands was considered by the affected tribes to be a direct affront to their sovereign rights. It was viewed as an outside group making management recommendations for tribal lands. This was an unfortunate misinterpretation of the TAP's purpose and goals that has not been fully corrected. Another aspect of the TAP process that caused offense was the absence of tribal representatives in the TAP. The TAP was formed from individuals with strong familiarity with the ecology of the shore adjacent to the sanctuary, expertise that admittedly is held by a number of tribal members and/or staff. In hindsight, it is clear that tribal representation should have been solicited for the TAP, because the absence of tribal input into this exercise has harmed the integrity of the MCWG process. This issue reveals the sensitivity of the tribes to any measures that appear to limit harvest and access opportunity within their U&A areas.

11.1.2 MCWG Deliberations on Intertidal Reserves

An intertidal reserve was defined as an intertidal area between extreme high water and extreme low water that is closed to all collection of living and non-living things and other extractive human uses. Marine reserves are also called no-take areas. Discussions about intertidal reserves were held by the MCWG with the understanding that Native American treaty rights ensure that tribal members retain access to resources in intertidal areas for all treaty purposes, including but not limited to resource management (see Sections 4.2 and 5.1). This means that regulations promulgated by the U.S. federal government cannot restrict tribal members from harvest or

management activities on federal and state lands within their tribe's U&A areas, except when essential for conservation of a species.

A detailed description of the intertidal reserve zone and a summary sheet for each selected site are provided in Appendix B. A matrix of activities and recommended regulatory response for each intertidal zone type is provided in Table 2. A brief summary is provided below.

A brief justification statement for intertidal reserves is:

> to preserve intact biological communities and undisturbed aesthetic qualities at selected portions of the ocean shoreline in a national park and to prevent incremental degradation that could result from increasing visitation, organism collection in excess of sustainable levels, and harvest techniques that are destructive to habitat and the complex structure of the biological community.

The purposes of intertidal reserves are:

1. to provide limited areas where the integrity of biological communities has minimal influence from harvest pressure, for values inherent in the communities and distinct from human use values,
2. to provide limited areas of intact biological communities where research can be conducted to evaluate natural processes in the absence of harvest, and areas to serve as controls for study of community dynamics at harvested areas,
3. to provide protected areas that can serve as source sites for propagation of intertidal organisms to offsite areas,
4. to encourage a public conservation ethic by establishing protected zones where the value of resource protection can observed, understood, and appreciated, and
5. to provide areas where the accumulation of shells, sticks, rocks, and other natural materials is representative of a state undisturbed by the actions of transient visitors.

The management recommendations for intertidal reserves are:

1. to prohibit the collection of all living organisms in an intertidal reserve, except for treaty use in all U&A areas,
2. to prohibit souvenir collection of rocks, sticks, shells, and other beach materials of natural origin,
3. to prohibit beach fires to preserve the natural state of woody flotsam and jetsam on the shore, and
4. to implement the intertidal reserve status for a long-term, indefinite period.

A more detailed analysis of potentially allowable and regulated activities in intertidal reserves and other zone types is provided below in Table 2.

Seven intertidal reserve sites were selected by the MCWG by evaluating a variety of attributes including habitat type, sensitivity to harvest impacts, and accessibility of the shore to visitation. The recommended intertidal reserve sites are Point of Arches, Cape Alava to Sand Point, 2-Bit Point, Cape Johnson/Hole-in-the-Wall, Teahwhit Head, Taylor Point, and Goodman Creek to Hoh River (Figures 8 and 9). Each recommended intertidal reserve sites is introduced briefly below, moving from north to south, with more detailed descriptions provided in Appendix B.

Table 2. Matrix of Allowable Activities at Proposed Intertidal Zones

	Intertidal reserve	wildlife protection zone	high use zone	existing management zone
Access	yes	no (1)	yes	yes
Hiking	yes	no (1)	yes	yes
camping (3)	yes	no (1)	yes	yes
swimming	yes	NA (7)	yes	yes
pets	no	no	limited areas (5)	limited areas (5)
camp fires	no (1)	no (1)	yes	yes
collection/consumption of living organism	no (1)	no (1)	yes	yes
fishing from shore	yes (4)	no (1)	yes (4)	yes (4)
fishing from boat	yes (4)	NA (4)	yes (4)	yes (4)
scientific sampling	yes (2)	yes (2)	yes (2)	yes (2)
souvenir collection (shells, sticks, rocks)	no (1)	no (1)	yes (5)	yes (5)
large group visitation	-	-	-	-
for camping	yes (2, 5)	no (1)	yes (2, 5, 6)	yes (2)
for interpretive programs	yes (5, 6)	no (1)	yes (1, 2, 5, 6)	yes (5)
removal of non-native organisms	yes (2)	no (2)	yes	yes
trash collection	yes	no (2)	yes	yes
large-scale habitat disturbance (e.g., mining, cable landings)	no (2)	no (2)	no (2)	no (2)
motorized vessel landing	no (2)	no (2)	no (2)	no (2)
non-motorized vessel landing	yes	no (1,2)	yes	Yes
SCUBA diving from	yes	NA (1, 7)	yes	Yes
surfing and non-motorized vessel landing	yes	NA (1, 7)	yes	Yes

(1) change from current regulations
(2) permit would be required
(3) camping opportunity is in uplands adjacent to intertidal zone
(4) State license required
(5) within limits established by ONP
(6) registration with ONP would be required
(7) not applicable because shoreline access would be prohibited

Point of Arches is approximately 3.1 miles (5,011 meters) of shore, an area of extraordinary scenic beauty with a series of rocky headlands, cliffs, and isolated gravel and sand pocket beaches. This stretch has high physical diversity of habitat and biological diversity in the intertidal community, linked with nearshore reefs and kelp beds. It lies immediately south of the popular Shi Shi Beach. Harvestable resources include those associated with rocks (mussels, gooseneck barnacles) and mixed sand (hardshell clams). Overland trails circumvent most of this site, with moderately difficult access to much of the shores.

Cape Alava to Sand Point is a very heavily visited area on the popular Ozette Loop trail that receives over 40% of all documented coastal backcountry use in ONP, as well as high levels of day use. High use levels and easy access to the entire shore create high potential for harvest impacts to natural resources. The intertidal habitat is primarily an extremely wide boulder and bedrock platform with mixed sand and gravel beaches that support hardshell clams. This potential intertidal reserve site is 3.8 miles (6,073 meters) long and adjoins the Ozette Reservation that includes Cannonball (Tskawahyah) Island. Existing ONP regulations include limited entry for backcountry permits (i.e., a camping quota) and a beach fire restriction in the southern half of the area. Seasonal (summer) ranger presence and trail entrance at the Ozette ranger station facilitate visitor outreach.

2-Bit Point is 1.0 miles (1,573 meters) of biologically rich mixed gravel and sand substrate over a wide platform shoreline. As an intertidal reserve, its primary value would be protection of hardshell clam habitat. Backcountry transit is the main visitor use because few good campsites exist and trailheads are distant.

Cape Johnson/Chilean Memorial is a 4.4 mile (7,156 meters) long section of shore that encompasses a variety of habitats including a prominent rocky headland, a wide intertidal platform, and mixed gravel and sand beaches on the upper shore. Access to the southern end (Hole in the Wall) is a relatively easy walk via Rialto Beach. This section of coast receives relatively high levels of backcountry (camping) use. ONP ranger presence at Mora and interpretive walks on Rialto Beach offer good educational opportunity to discuss resource protection.

Teahwhit Head is a dramatic, prominent and largely inaccessible rocky headland immediately south of the popular Second Beach. Intertidal habitat is rock cliff with narrow pocket beaches of gravel and sand in the high intertidal over a total distance of 1.1 miles (1,719 meters).

Taylor Point is a rocky headland, inaccessible except for brief periods at extremely low tides, at the southern end of Third Beach, a popular day and overnight site. An overland trail circumvents this 1.2 miles (1,862 meters) of shoreline. This is the southern most distribution of sea urchins in Washington State.

Goodman Creek to Hoh River is the largest potential intertidal reserve site identified, at 9.3 miles (14,969 meters). This stretch encompasses diverse habitats, including a unique combination of estuary and rocky habitat at Goodman Creek, a long and wide sand beach (Mosquito Creek), mixed gravel and sand beaches, and an inaccessible and prominent headland (Hoh Head). This is one of the longest and least accessible stretches of wilderness shore on the western coast between Canada and Mexico.

This set of potential intertidal reserves has the following attributes.

1. All are on the ONP shore; none are on tribal reservations or state-owned shores, although they are in tribal U&A areas.

2. They are widely distributed over the ONP shoreline.
3. They include habitat representative of each of the 5 major intertidal habitat types found on ONP shores, which provides protection for a wide variety of intertidal species that live on the shores (Table 3).
4. They comprise 37% of the ONP marine shoreline (Table 3).
5. Many of these potential intertidal reserve sites contain rocky headlands that are basically inaccessible to humans (Teahwhit Head, Taylor Point, Point of Arches, Cape Johnson, Goodman Creek and Hoh Head). These headlands are sites of high biodiversity (i.e., high biomass/productivity and numbers of species) and potential source sites for distribution of larvae to broader portions of the shore.
6. One potential intertidal reserve site was identified to protect against destructive organism collection practices primarily because it is an area that receives the most backcountry visitors on the outer coast (Cape Alava-Sand Point). Other site-specific regulations apply to this area (i.e., limit on number of backcountry permits, beach fire prohibition) for this reason.
7. One potential site was identified specifically because it is a relative inaccessible area of hardshell clam habitat (2-Bit Point).
8. Two potential sites were identified because they include a variety of habitat types in a long, contiguous stretch distant from other reserve sites (Cape Johnson-Chilean Memorial and Goodman Creek-Hoh Head).

Table 3. Summary of intertidal habitat types in Olympic National Park and potential intertidal reserve sites

	All of ONP Shoreline		Intertidal Reserves		
Habitat type	meters		% of total	meters	% of habitat type
Rock ramp	2,318		2%	2,318	100%
Rock cliff	4,027		4%	2,578	64%
Mixed gravel	40,031		38%	20,434	51%
Sand	55,480		53%	12,060	22%
Estuary	2,558		2%	974	38%
Total	104,413 meters			38,365 meters	
	64.8 miles			23.8 miles	37% of ONP shore

Although it was clear that all participants were not in complete agreement about where and how intertidal reserves should be proposed, there was consensus among participants at later meetings that a report should be forwarded to the Advisory Council expressing member's views. This was accomplished through a polling of participants. To capture the range of opinion, participants developed these options for implementation of intertidal reserves:

1. No intertidal reserves.
2. We have identified areas of special conservation significance for ongoing management decisions; no specific management recommendations are offered.
3. Voluntary intertidal reserves with emphasis on public outreach/education.
4. Voluntary intertidal reserves with emphasis on public outreach/education, and either compliance-based or resource damage trigger for evaluation of management options on a site-specific basis.

5. Regulatory establishment of intertidal reserves with initial emphasis on public outreach/education, rather than enforcement. Enforcement actions would be implemented after a suitable period.
6. Regulatory establishment of intertidal reserves with public notification and immediate implementation of enforcement actions.

Option 2 was unique because it indicated support for acknowledging selected areas of special conservation significance while avoiding making a judgment as to how these areas should be managed. Participant support for this option implies support for special consideration directed at selected areas in theory, for example through zoning. The site-specific management decisions, however, should be elevated to other authorities and not directly influenced by recommendations from the MCWG.

The following levels of agreement were developed to express each member's position on each implementation option.

1. I do not agree with this option.
2. I may not be especially enthusiastic about it, but I can accept this option.
3. I think this is the best option available to us.
4. I am enthusiastic about this option

Detailed results of the polling are provided in Appendix B. A summary of the results follows.

- All participants were able to support recognition of areas of special conservation significance without specific management recommendations (option 2) and voluntary intertidal reserves with no trigger for regulatory implementation (option 3).
- Most participants felt the best option for implementation was recognizing special areas without making management recommendations (option 2).
- Several expressed enthusiastic support for either voluntary or regulatory intertidal reserves without strict enforcement (options 3 and 4).
- Consistently low levels of support were expressed for no intertidal reserves (option 1) or intertidal reserves with immediate enforcement (option 6).

The following specific comments were provided by participants.

- Commercial fishing representatives could not support intertidal reserves of any kind that apply only to non-tribal persons, and therefore could not provide even unenthusiastic support for any option with potential for regulatory implementation (i.e., options 4, 5, and 6).
- Commercial fishing representatives were not convinced that extensive intertidal reserves were appropriate and suggested limiting intertidal reserves to 1 mile of shore or less, if intertidal reserves were to be implemented.
- The conservation representative emphasized that MCWG recommendations should not preclude implementation of more restrictive management if authorities deemed it necessary now or in the future.
- The Quileute Tribe emphasized that tribal biologists and other staff require access to intertidal reserves for resource management purposes, as well as tribal access for treaty harvests.
- The WDNR representative questioned Option 4, in particular how compliance or resource damage would be measured. The absence of criteria to define a trigger for regulation made it difficult to support this option.

- Commercial fishing representatives pointed out that the goals of intertidal reserves could be accomplished by limiting access. If access were not easy, human use and associated disturbance to intertidal areas would be less.

11.2 Wildlife Protection Zones

11.2.1 Background Nesting seabirds and marine mammals hauled out on the shore are particularly vulnerable to human disturbance. The islands and rocks in the WINWR provide habitat for over 72 percent of Washington State's nesting seabirds and host among the seabird largest colonies in the continental U.S. Some seabird species only breed on the outer Olympic Coast, likely due to a loss of nesting habitat elsewhere in Washington (e.g., common murres). One island is unique in that it hosts an isolated population of the shrew-mole, the Destruction Island shrew, a Federally listed Species of Concern found only on Destruction Island.

Several federal and state regulations and designations provide protection to seabirds and marine mammals. Under the Endangered Species Act, four species that use the islands and reefs are listed as threatened or endangered (brown pelican, marbled murrelet, bald eagle, and Steller sea lion). The Endangered Species Act protects "listed" species from disturbance by human activity. Six additional species of birds and mammals found on outer coast islands and sea stacks have status as endangered, sensitive, or candidate species under the Washington State Priority Habitats and Species Program (Brandt's cormorant, Cassin's auklet, common murre, peregrine falcon, tufted puffin, and sea otter). Federal regulations (36 CFR Part 2, Sec. 2.2) prohibit frightening or intentional disturbance of wildlife nesting and breeding in national parks. Furthermore, any human action that substantially disrupts the normal behavior of seals and sea lions is prohibited under the Marine Mammal Protection Act, with guidelines that restrict human activity within 100 yards of marine mammals, or swimmers and divers within 50 yards, with the exception that tribes are permitted ceremonial and subsistence harvest. Further, Section 1374 of the Marine Mammal Protection Act allows for tribal incidental take to protect their harvest and gear from seal and sea lion damage, or to protect from loss of human life. All non-lethal methods must first be exhausted.

Existing regulations, however, also allow for diverse use of intertidal areas of offshore rocks, sea stacks, and islands. WINWR regulations prohibit access to all offshore lands without permit, but this restriction applies only to lands above mean high water, the lower limit of refuge jurisdiction. A 200-yard access buffer around offshore lands is a recommended setback, not an enforceable regulation, which WINWR uses to reduce access and minimize human disturbance to critical nesting and breeding grounds for marine wildlife. Motorized and hand powered vessels can legally transit and anchor within 200 yards of these lands. Jurisdiction of intertidal areas of the refuge islands is shared between ONP and OCNMS. Current ONP management does not include specific regulations associated with offshore rocks, reefs, and islands. ONP regulations that apply to the entire coastal strip, including the islands, allow access to intertidal areas and seasonal harvest of living organisms but do not allow landing of motorized craft on the park's shore. ONP regulations do not specifically prohibit disturbance to seabirds or access to intertidal areas adjacent to sea bird colonies during non-nesting/breeding periods. Consequently, it is not against federal regulations for people to land hand powered vessels on the shore below mean high water, walk along the shore, have a campfire in the intertidal area, and collect intertidal organisms for consumption, unless they violate regulations cited above.

11.2.2 MCWG Deliberations The MCWG developed the wildlife protection zone to address unique management considerations for offshore rocks, sea stacks, and islands within ONP and

WINWR. A brief analysis of this zone type is provided below, and a more detailed description of the issue is provided in Appendix C. A matrix of activities and recommended regulatory response for wildlife protection zones type is provided in Table 2.

A wildlife protection zone was defined as an intertidal area closed to all access, except by permit or for emergency response. The intertidal areas of offshore rocks and islands currently receive little visitation, although there is no data to characterize the level of use. It is widely recognized, however, that the islands are hazardous and unstable areas for human use and access. Restricting human access to the islands and rocks serves the dual purpose of protecting the habitats and species and eliminating the safety risk associated with visiting these shores.

The purposes of wildlife protection zones were defined as:

1. to provide specific areas that are preserved in an undisturbed state with minimal human intrusion, for their intrinsic and scientific value at limited but appropriate sites,
2. to protect critical nesting and breeding grounds for seabirds and haul out areas for marine mammals that are particularly susceptible to disturbances by humans on the shore,
3. to provide a level of protection for intertidal areas equal to that of the islands' uninhabited terrestrial environment, and
4. to enhance public safety by restricting access to these dangerous and unstable environments.

A number of islands have extraordinary value because of the species or numbers of nesting birds present, but it was difficult to select prioritized sites among the islands because most islands are important breeding grounds for one or more species. In addition, different access restrictions for selected islands was viewed as a complex management approach that would be difficult to effectively convey to the public. Seasonal regulations that differ during nesting and non-nesting seasons also were not considered to be practical to implement or easily conveyed to the public. Year-round regulations that apply to all islands was clearly the most practical and effective management approach.

An additional area considered was sea stacks accessible from the mainland at low tide. These pinnacles typically have a thin veneer of soil held in place by vegetation overlying hard rock. Scrambling up sea stacks is an exciting temptation for coastal explorers, even though the destructive effects are clearly visible (e.g., broken and dead herbaceous plants, exposed and broken woody roots). Vegetation is easily damaged by this process, and soil deposits are quickly eroded by the elements once exposed. Many sea stacks are accessible from the shore, and enforcement of an access prohibition would be difficult. The MCWG determined that the most critical attention should be readily accessible sea stacks with documented seabird nesting sites or marine mammal haul out areas. The only site that fit these criteria was Crying Lady Rock, located off Second Beach. This sea stack hosts three species of cormorants (pelagic, double crested, and Brandt's) and peregrine falcon.

The management options developed by the MCWG were as follows.

1. Wildlife protection zone should apply to all marine offshore rocks, reefs, and islands within the Washington Islands National Wilderness Refuges, Olympic National Park, and Olympic Coast National Marine Sanctuary boundaries , as well as Crying Lady Rock off Second Beach. Within this zone, access should be prohibited without a permit, except for emergency response.
2. Access permits could be granted for scientific research. Inter-agency coordination is required for this permitting. Research that cannot reasonably be conducted at other sites should be favored.

3. Other management actions should be considered as necessary (e.g., interpretive signs, increased enforcement presence) to address emerging issues such as emerging interest in technical rock climbing or new extreme sports.

Tatoosh Island is part of the Makah Tribal Reservation, and James Island is part of the Quileute Tribal Reservation. These two islands are not part of the WINWR, are not under federal management, and are not included in these recommendations.

To capture the range of opinion, participants developed these options for implementation of wildlife protection zones:

1. No intertidal reserves.
2. We have identified areas of special conservation significance for ongoing management decisions; no specific management recommendations are offered.
3. Voluntary wildlife protection zones with emphasis on public outreach/education.
4. Voluntary wildlife protection zones with emphasis on public outreach/education, and either compliance-based or resource damage trigger for evaluation of management options on a site-specific basis.
5. Regulatory establishment of wildlife protection zones with initial emphasis on public outreach/education, rather than enforcement. Enforcement actions would be implemented after a suitable period.
6. Regulatory establishment of wildlife protection zones with public notification and immediate implementation of enforcement actions.

Detailed results of the polling are provided in Appendix C. A summary of the results follows.

- All participants supported this zone type at some level; all participants rejected option 1 (no wildlife protection zone). This broad support is recognition of the unique wildlife value of the islands, both on the uplands and intertidal areas.
- All participants gave strong support for access restrictions on the islands, either as voluntary measure (options 3 and 4) or a regulatory measure with emphasis on public outreach rather than enforcement (option 5).
- ONP and research representatives gave enthusiastic support for wildlife protection zones and did not support at any level other options for implementation.
- Strong polarization is evident under option 5, where the majority of participants were enthusiastic about this option but the Quinault Tribe, commercial fishing, and WDNR representatives did not support this option.
- No participants supported implementation with immediate enforcement actions (option 6).

The following specific comments were provided by participants.

- The Quileute Tribe noted that tribal managers and biologists have access to such areas guaranteed by treaty rights.
- The Quileute Tribe questioned the need for including Crying Lady Rock in this zone. They noted that birds on Crying Lady Rock are high up from the beach and do not appear to be disturbed by human activity on the beach and questioned if adequate protection for seabirds was not provided by the offshore rocks and islands.
- The WDNR representative questioned Option 4, in particular how compliance or resource damage would be measured. The absence of criteria to define a trigger for regulation made it difficult to support this option.

11.3 High Use Zones

11.3.1 Background All visitors to ONP can contribute unintentionally to disturbance of intertidal habitats and organisms, both plants and animals. The most significant impacts, however, occur primarily at high use areas where the cumulative effect of numerous visitors degrades the shore. Organized interpretive and educational programs bring large numbers of visitors to intertidal areas and are an identifiable and discrete activity with potential to degrade intertidal areas, yet one that can be addressed through management actions. Although group visits focus foot traffic on limited areas, interpretive programs are also an opportunity for educating the public about a variety of topics including the coastal ecosystem, a conservation stewardship ethic, the potential for visitors to damage intertidal habitats and biological communities, and the value of management practices for conservation. Moreover, benefits of an improved stewardship ethic extend to all portions of ONP and beyond, and potentially to many aspects of visitors' daily lives.

11.3.2 MCWG Deliberations A detailed description of high use zones and related MCWG discussion is provided in Appendix D. A matrix of activities and recommended regulatory response for high use zones is provided in Table 2. A brief summary is provided below.

High use zones were defined as areas that receive or are susceptible to physical disturbance as a result of high levels of visitation. Based primarily on visitation levels, high use areas on the ONP shore were identified at Cape Alava to Sand Point, Rialto Beach to Hole-in-the-Wall, Second Beach, Third Beach, and the coast stretch between Ruby Beach and South Beach that includes Kalaloch, where Highway 101 follows the coast closely. Improvements to trail access to Shi Shi Beach via the Makah Reservation and national media coverage testifying to the area's beauty could significantly increase visitation levels to this popular area in the near future.

The purposes of a high use zone designation are:

1. to minimize non-harvest human disturbance and impacts at high use sites,
2. to encourage education and interpretive activities at appropriate sites,
3. to focus trampling impacts at particular sites, and
4. to instill a stewardship ethic in visitors through interpretive opportunities.

The MCWG did not prescribe specific management recommendations for high use zones, but outlined a variety of creative suggestions that could be implemented. In many cases, existing management actions by ONP were considered appropriate for addressing high levels of visitation and were acknowledged as being proactive in addressing potential visitor impacts. The following are specific MCWG recommendations for management of high use zones.

1. Access should be controlled at many levels, for example through trailhead and parking area design and site selection.
2. Registration with ONP by large groups of visitor should be required. A specific criterion for group size was not identified. Registration provides a level of control of visitors and an opportunity to provide information to groups.
3. Signs and handouts indicating appropriate codes of conduct should be developed and available to the public.
4. A database of large group visits should be developed to track trends and area use.
5. Large group visits should be directed to designated high use zones.
6. Groups over a certain, undefined size should have an ONP interpreter present to lead activities.
7. With consideration of the restrictions on signage and construction appropriate for wilderness designation, established walkways should be considered at sites most impacted by trampling.

8. Enhanced interpretative efforts at contact stations should focus on conservation and minimization of visitor impacts.
9. Face-to-face contact is the most effective interpretive technique, but signs are also useful tools. Improving signs at coastal trailheads and making this a priority in the maintenance cycle should be encouraged.
10. Recognizing that face-to-face interpretation is important for effective interpretation as well as compliance with regulations, and that there is some optimum group size for effective interpretive walks, interpretive opportunities should be increased during peak demand periods. For example, additional interpretive staff should be available for summer weekends if data indicate average interpretive group size greater than optimal (e.g., 30 public).
11. Long term monitoring for visitor impacts on the intertidal community and visitor actions should be implemented, particularly at high use sites.

For high use zones, participants developed only two options for implementation.

3. No designation of high use zones.
4. Recognize high use zones as areas where high visitation levels could require special management consideration

All participants gave strong support to the recognition of and special management consideration at high use zones. The majority of participants were enthusiastic in their support for high use zones.

11.4 Existing Management Areas

In the analysis of intertidal zoning on federal (i.e., ONP) and state (i.e., WSPRC) lands, the MCWG concluded that the current management regime was appropriate for much of the shoreline. Areas that were not incorporated into the other use zones could be categorized by default as existing management areas. This amounts to 38% of the federal shores, or 49% of the shore if WSPRC shores are included in this analysis. This conclusion recognizes that ONP and WSPRC have done a commendable job managing their lands, in terms of both development and implementation of regulations. The MCWG did not analyze issues or make recommendations for tribal reservation lands or for U&A area treaty use for harvest or management activities.

11.5 Other Areas of Discussion

11.5.1 Washington Seashore Conservation Area The WSCA is under the jurisdiction of the Washington State Parks and Recreation Commission, spans the shoreline between the Quinault Reservation and Grays Harbor, and includes the North Beach Seashore Conservation Area (NBSCA), which lies between the Moclips and Copalis Rivers along approximately 8 miles of shoreline. State jurisdiction extends from ordinary high tide to extreme low tide. The NBSCA is adjacent to OCNMS but there is jurisdictional overlap in a narrow band of the lower intertidal zone (i.e., between extreme low tide and mean lower low water). Within the WSCA, recreational uses are regulated to maintain the best possible condition for public use, to "save [the seashore] for our children in much the same form as we know it today" (RCW 79A.05.600). State Parks will conduct management review of NBSCA within a few years. Some relevant characteristics of the NBSCA are:

1. All habitat is classified as wide sand flat and estuary. The estuaries appear to have minimal habitat value to anadromous fish.

2. The NBSCA corresponds to the Mocrocks razor clam management area, a popular recreational harvest area that has Quinault tribal commercial and subsistence clam harvest. No WDFW razor clam reserves (harvest-restricted areas for research purposes) occur in Mocrocks.
3. Other harvestable resources are Dungeness crab, sand shrimp, and limited hardshelled clams. Presence of other edible species is very limited. Monitoring of fecal coliforms has led to harvest closures at Joe's Creek and the Moclips River mouths.
4. Because this is under WSPRC jurisdiction, harvest of unclassified species (e.g., limpets, nudibranchs, snails) is not allowed.
5. Copalis Rocks are the only hard substrate where harvestable mussels and goose barnacles are present, but legal non-tribal harvest is restricted to winter months (Nov.-Mar.) when access occurs only at nighttime low tides. These rocks are sand scoured and not likely to host unique species. Seabirds roost but do no nest on these rocks.
6. Day use beach driving is allowed, and entry points are limited to 4 locations. Each year 2 or 3 vehicles get stuck on the beach, but little habitat damage has been documented from this activity.
7. The restricted season for beach driving (April 15 to Labor Day) was not selected with consideration of migratory shorebird use. The northward shorebird migration starts in early to mid-March. Vehicle disturbance increases energetic demands on birds and disrupts intertidal foraging.
8. The last designated aircraft beach landing site in Washington lies between the Copalis River and Copalis Rocks, where about a dozen planes land at razor clam openings. Otherwise, this gets very occasional use.

After discussing these issues, the MCWG developed the following general recommendations:

Water quality

1) Express appreciation for monitoring work conducted by Quinault Natural Resources Dept., Quileute Natural Resources Dept., and WA Dept. of Health and urge its continuance.
2) Investigate Grays Harbor County's septic inspection program, and urge the county to conduct routine inspections of older, suspect and multiple party/commercial systems.

Beach driving

1) Extending the vehicle restriction period to March 1 would minimize incompatibility with shorebird migration periods.
2) Encourage State Parks to effectively monitor and enforce beach driving regulations.

Seafood collection

1) Harvest regulations for unclassified species (e.g., limpets, nudibranchs, snails) in the WSCA need to be clarified by state agencies and clearly identified in the Sport Fishing Rules pamphlet.

Shoreline armoring is strongly discouraged by WSPRC, with permits/approval required from WSPRC, Grays Harbor County, and WDFW. There are clear impacts of armoring on intertidal areas, but few locations where armoring is likely to be requested in the future.

1) Encourage WSPRC to continue its policy of discouraging armoring.

Oil spills and vessel groundings are mitigated by the area to be avoided (ATBA) that was implemented to protect OCNMS, but the vessel monitoring system does not cover the southern sanctuary area. Other monitoring systems also miss the southern sanctuary area. The nearest

Doppler radar is Tatoosh; wave buoys are west of the Strait of Juan de Fuca, off Cape Elizabeth, and off the Columbia River.

1) Develop system to monitor vessel traffic in southern OCNMS.
2) Get Doppler radar system coverage for weather to provide better weather predictions to mariners.
3) Support and expand the NOS wave buoy system to provide better wave and wind data for the area. Both #2 and #3 could improve the safety for vessels and reduce the risk of oil spills and vessel stranding on the outer coast.
4) Better training for agency and other potential responders (i.e., small commercial vessels) should be more readily available.

Wood chip deposition occurs periodically on the beach, with releases likely from outside OCNMS because of ATBA. This is a patchy problem at drift collection locations.

1) Encourage the marine industry representative on the OCNMS Advisory Council to investigate the issue, number of barges involved, and potential for covering loads.

Dune habitat occurs on the upper shores of Copalis Spit at the Griffiths-Priday State Park. The northern portion of the Spit is adjacent to OCNMS, and this habitat type is not represented at any other locations adjacent to OCNMS.

1) Encourage the WSPRC to manage this as a low impact area.

Aircraft landing is considered a public safety issue with no effects on the intertidal habitat. Wildlife concerns related to low level flights on approach and take off are better addressed in USFWS and OCNMS management plan review. No specific recommendations on aircraft landing were forwarded from MCWG.

11.5.2 Cultural Resources Evaluation of the effectiveness of zoning associated with cultural, archaeological, and historic resources and sites was considered beyond the expertise of MCWG participants. To support the work of the MCWG, a group of cultural resource experts from the outer coast tribes, ONP and state agencies was assembled to consider if protection of cultural resources could be improved through intertidal zoning. A summary report for these discussions is provided in Appendix A. Identified threats to coastal cultural resources are oil spill response (both response and clean up activities, as well as lack of cultural resource expertise in Incident Command Structure), beach debris (physical damage to intertidal artifacts, i.e., Wedding Rocks petroglyphs), pilfering and theft (occurs but to a small extent), physical damage (enhancing petroglyphs for photography), lack of inventory (only a few sites have been identified and assessed), and site identification (identification invites disturbance). Existing federal and state regulations provide strong protection for cultural resources.

This expert group had a high degree of consensus that better inventory of sites and resources is an essential step. We could also benefit from an improved understanding of the varied human uses of the shore and the influence of humans on the shore's ecology. However, many participants expressed uncertainty about the purpose and the management objectives of intertidal zoning for cultural resources, which is complicated by the fact that cultural resources tend to span a wide area from uplands, high beach, intertidal to nearshore reef areas. Experience has generally confirmed that identification of sites leads to increased disturbance and serves to degrade rather than preserve many cultural resources. A public well informed of the values, sensitivity to disturbance, and regulations associated with cultural resources is an essential component of their preservation. Thus, more effective interpretive efforts, through rangers, trailhead signs, and visitor centers could enhance public stewardship. Signs directly at selected sites are not effective, nor is enforcement likely to be effective, given the remote nature of most sites. Small cultural

resource zones at sites not vulnerable to disturbance (e.g., memorials or large shipwreck parts) might not have negative impacts, but the management objectives for such zones is unclear. Larger "cultural landscape" zones could be useful for outreach and education, while avoiding the risk of identifying the locations of specific artifacts or sites. Because these primarily would be village sites, tribes are the appropriate lead authority for such an effort.

After consideration of these discussions, the MCWG developed the following recommendations:

1. Consideration for the presence of diverse cultural resources on the outer coast should be elevated in the Outer Coast Geographical Response Plan published by the Washington State Department of Ecology. Potential impacts to cultural resources of response and clean up activities should receive stronger emphasis in the oil spill response process. Where points of contact for agencies are provided, cultural resource representatives should be added to these lists. Cultural resource experts should be incorporated into spill response planning units.
2. Interpretive opportunity at locations distant from specific cultural resource sites should be maximized to enhance public awareness of cultural resource values, regulations that protect them, and public sensitivity to impacts that they may have on cultural resource sites.
3. More funding should be available for inventory of cultural resources on the outer coast in nearshore areas.

11.5.3 Bald Eagles and Marbled Murrelets Bald eagles (*Haliaeetus leucocephalus*) are Federally listed as Threatened under the Endangered Species Act (ESA). A total of 169 bald eagle nesting sites are documented on the coast adjacent to the sanctuary (WDFW 2002a). Bald eagles are found year round on the outer Washington coast, and eagles are most susceptible to disturbance while nesting, generally between January 1 through August 15 (USFWS 2001a). Marbled murrelets (*Brachyamphus marmoratus*) are Federally listed as Threatened under the ESA. Marbled murrelets feed in nearshore coastal marine areas, nest within 50 miles of the coast in old growth coniferous forest stands, and transit to nests to feed chicks at dusk and dawn (Hall 2000). About 5 active marbled murrelet nest sites are immediately adjacent to the intertidal area of ONP. Nesting activity in the study area typically begins in May, with most murrelets fledged by the second week of August. Currently, there are no management restrictions associated with recreational activity, such as hiking and camping, specific to these species because current practices are not considered to be a significant disturbance. Park regulations concerning motorize vehicles, fireworks, and other potentially disturbing activities do benefit these species.

11.5.4 Highway 101 Traffic The location of Highway 101 immediately adjacent to the water between Ruby Beach and South Beach greatly facilitates access to the shore. Along this stretch, visitors can access the shores without a significant physical effort of hiking a lengthy trail to the beach. As a result, these beaches receive high levels of visitation. Also, it is likely that the ease of access attracts a different mix of visitors than wilderness backcountry beaches receive. The shoreline south of Ruby Beach is predominantly a wide sand flat habitat that is exposed to high physical energy from waves, and it is resilient to most visitor-scale physical disturbance. Limited rocky habitat that does occur in this area is the subject of significant visitor interest. Damage to intertidal organisms on these rocks, such as Starfish Point, has been documented to result from collection of bait for surf fishing, food organisms, and live souvenirs. These impacts are best addressed through public outreach that informs visitors of the potential for damage. In addition, ONP prohibits harvest of intertidal organisms for use as bait. A simple approach to minimize intertidal impacts associated with ease of access from Highway 101 is to limit the locations of access points and to limit the availability or number of parking spaces at access points. These ideas were incorporated into MCWG discussions on high use zones.

11.5.5 Salmon, Estuaries and Eelgrass Comprehensive reviews of habitat conditions of salmonid-producing watersheds in Water Resource Inventory Area (WRIA) 20, between Cape Flattery and Steamboat Creek (south of the Hoh River) and WRIA 21, between Steamboat Creek and the Copalis River, were completed recently (Smith 2000, Smith and Caldwell 2001). These analyses contain both an inventory of existing anadromous fish stocks in each river basin and a detailed report on habitat condition status, including the estuarine portions of the watersheds, that are relevant only up to the date of publication. Smith (2000) defines estuarine habitat as "the area in and around the mouths of streams extending throughout the area of tidal influence on fresh water" and nearshore habitat as "intertidal and shallow subtidal saltwater areas adjacent to land." High quality estuary habitat is essential for some salmon species, particularly chinook, chum, and to a lesser extent, pink salmon. Typically, detritus-based food webs of estuaries provide abundant food for juvenile salmonids and result in rapid growth of salmon smolts. Estuaries are also important interim habitat where salmon adjust physiologically to saltwater. The importance of estuarine habitat for juvenile salmonid rearing and the degree to which existing estuarine habitat has been lost or degraded throughout Washington justify strong protection for existing estuarine and nearshore habitat and more restrictive management of upstream activities that have been shown to impact streams.

Estuarine habitat was characterized as "very limited" on the sanctuary coast by natural conditions (Smith 2000). Schoch's intertidal database identifies 19 estuaries on the coast of OCNMS. Nine of these estuaries in WRIA 20 have documented runs of anadromous fish (Smith 2000). The WRIA 21 limiting factors report (Smith and Caldwell 2001) covers 6 major rivers between the Queets River and Copalis River. The overall condition of estuaries and nearshore habitat in this area is rated as "good" with minor exceptions. Reduced levels of large woody debris and loss of associated refuge habitat are cited as detrimental change at the Ozette, Queets, and Quinault estuaries (Smith 2000, Smith and Caldwell 2001). Sedimentation was noted as a contributor to estuarine habitat damage at the Quillayute and Hoh Rivers (Smith 2000). The WRIA 21 report recommended studies to delineate habitat characteristics and fish use in small areas and prioritization of areas for restoration or protection (Smith and Caldwell 2001). The Quillayute estuary is the largest estuary on the Washington Coast north of Grays Harbor. This estuary has been significantly modified by sedimentation, and routine maintenance dredging of the channel and boat basin, dikes, shoreline armoring, require by the Rivers and Harbor Act because this is the only safe harbor between Neah Bay and Westport. This access is essential for the Quileute tribe for access to the fishery, as well as the USCG station that uses the river mouth for access to the ocean for rescue missions and other operations. Over 20 years ago, loss of estuarine habitat in the Quillayute estuary was estimated at 19% of the area (USACE 1979). Despite these modifications, anadromous fish runs using the Quillayute River are healthy. None are listed under the ESA.

The intertidal environment of OCNMS lies at the junction of estuarine and nearshore habitat, with a portion of each comprised of intertidal habitat. Whereas jurisdictional boundaries for OCNMS cuts across river or stream mouths at MHHW or MLLW, depending on the ownership of adjacent land, the MCWG considered potential zoning options that included the entire portion of estuaries. Impacts on salmon survival were the main consideration related to estuarine function and condition, and detrimental conditions include loss of habitat complexity due to filling, dikes, and channelization, and alteration of sediment processes with concurrent changes in habitat structure and function.

Because uplands practices, particularly logging and residential development, are the source of most problems in these estuaries, the MCWG did not make specific recommendations on zoning at estuaries in the area of interest.

The one recommendation related to estuaries is that a high level of protection be provided to Goodman Creek, which is consistent with the recommendation in the WRIA 20 report (Smith 2000). Goodman Creek was included in an intertidal reserve that stretched from the headland north of the creek's estuary to the north shore of the Hoh River.

12.0 Public Education and Outreach

One component of the MCWG's purpose was to make recommendations on a public education and outreach strategy associated with intertidal zoning (see Section 3.0). Public outreach for intertidal zoning was a major topic for discussion at the March 2001 SAC retreat. The main points that resulted from SAC discussions were the following.

1. The SAC must be well informed, maintain credibility, and understand justifications for zoning options.
2. The SAC must obtain and understand constituent perceptions of zoning options.
3. It is important for all parties to participate in the process.
4. Constituents that should be engaged are those that use the intertidal zone and those indirectly affected by zoning options.

The MCWG, with the assistance of Bob Steelquist, OCNMS Education/Outreach Coordinator, drafted a preliminary outreach and communications plan that 1) outlined goals and objectives, 2) identified critical audiences, 3) identified important communication points or issues, and 4) proposed tools and strategies to reach different audiences or groups. That document is provided in Appendix A. A draft timeline for this process was also developed with an anticipated completion of MCWG meetings in late 2001. The timeline listed different activities and attributed responsibility to the MCWG, OCNMS staff, and/or the SAC. Outreach activities for the MCWG were associated with consultation with constituents by MCWG participants, reporting to the SAC, and providing meeting notices and meeting minutes via a publicly accessible forum.

Whereas the MCWG acknowledged the importance of public outreach, participants believed their main goal was to identify zoning options. Public outreach was considered a task to be pursued by others. A summary of outreach efforts associated with the MCWG's intertidal zoning process is provided in Appendix A. This summary does not include contacts with individuals who inquired about the process through the OCNMS office nor does it address constituent outreach by MCWG participants.

The outreach and communications plan in Appendix A has not been updated since January 2002 and does not reflect lessons learned and other developments during the past 2 years. This plan does, however, represent a commendable foundation for an outreach plan that could be developed further and implemented by various entities, including OCNMS, the Advisory Council, ONP, USFWS, and others.

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Note: the acknowledgments provided above are not meant to imply that these individuals or agencies supported or consented to the intertidal zoning review process or this report.

FIGURES

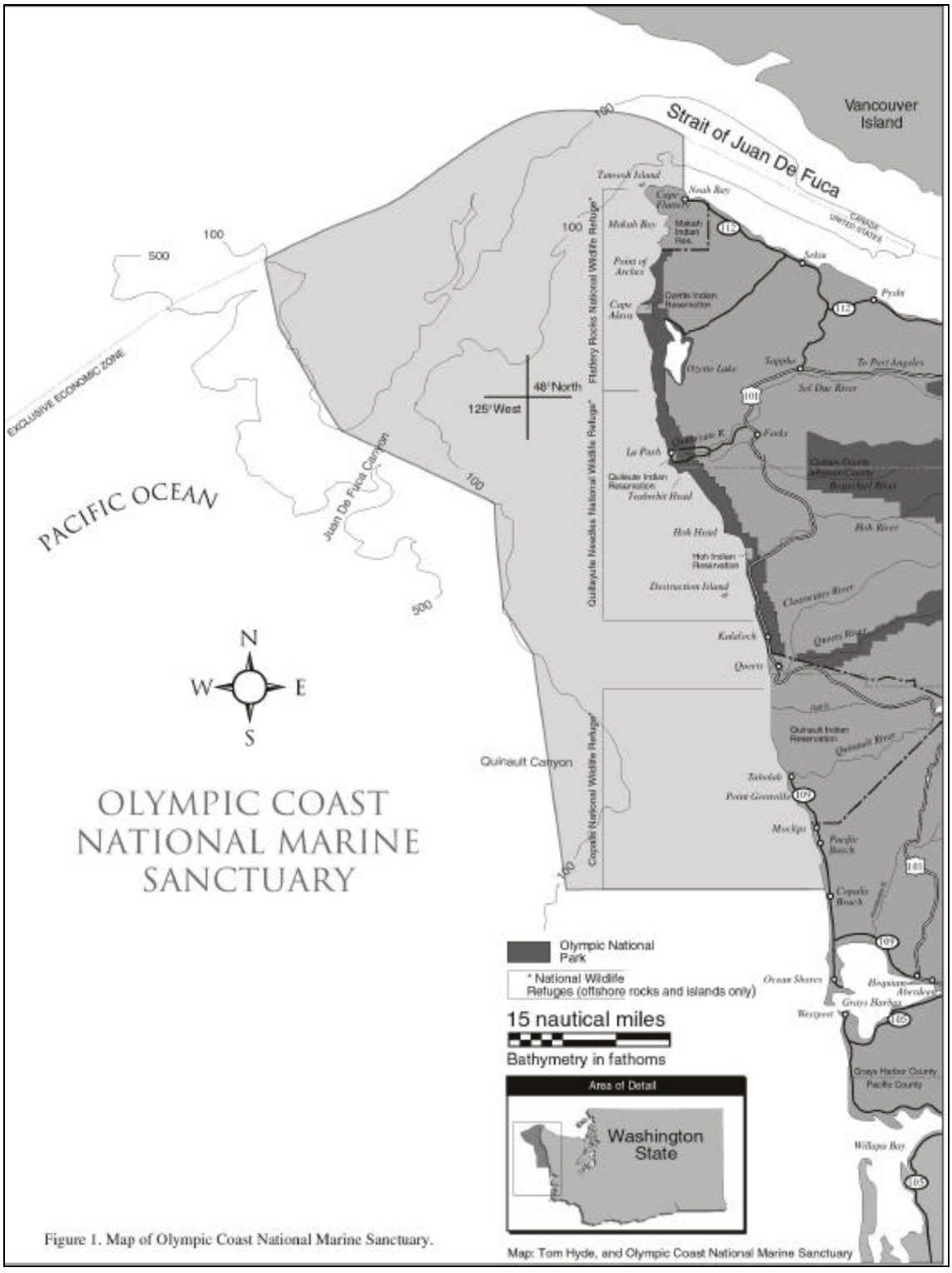

FIGURE 1. THE OLYMPIC COAST NATIONAL MARINE SANCTUARY, TRIBAL RESERVATIONS, OLYMPIC NATIONAL PARK COASTAL STRIP, AND WASHINGTON ISLAND NATIONAL WILDLIFE REFUGES

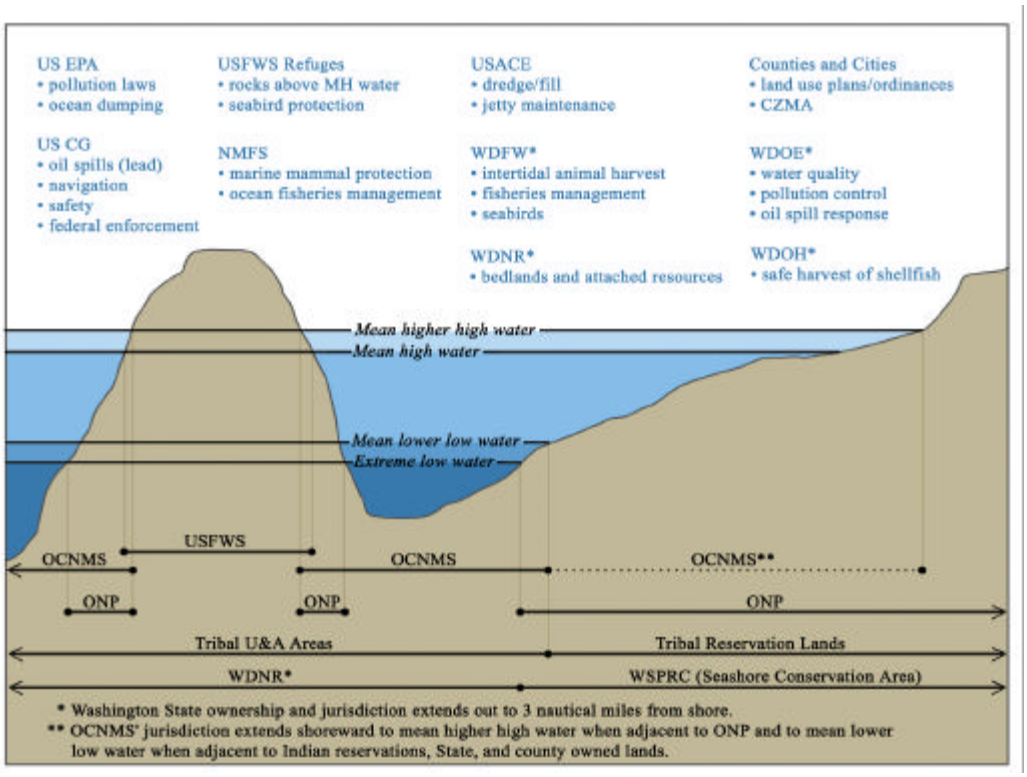

FIGURE 2. JURISDICTION OF LANDS, WATERS AND RESOURCES OF THE OUTER WASHINGTON COAST

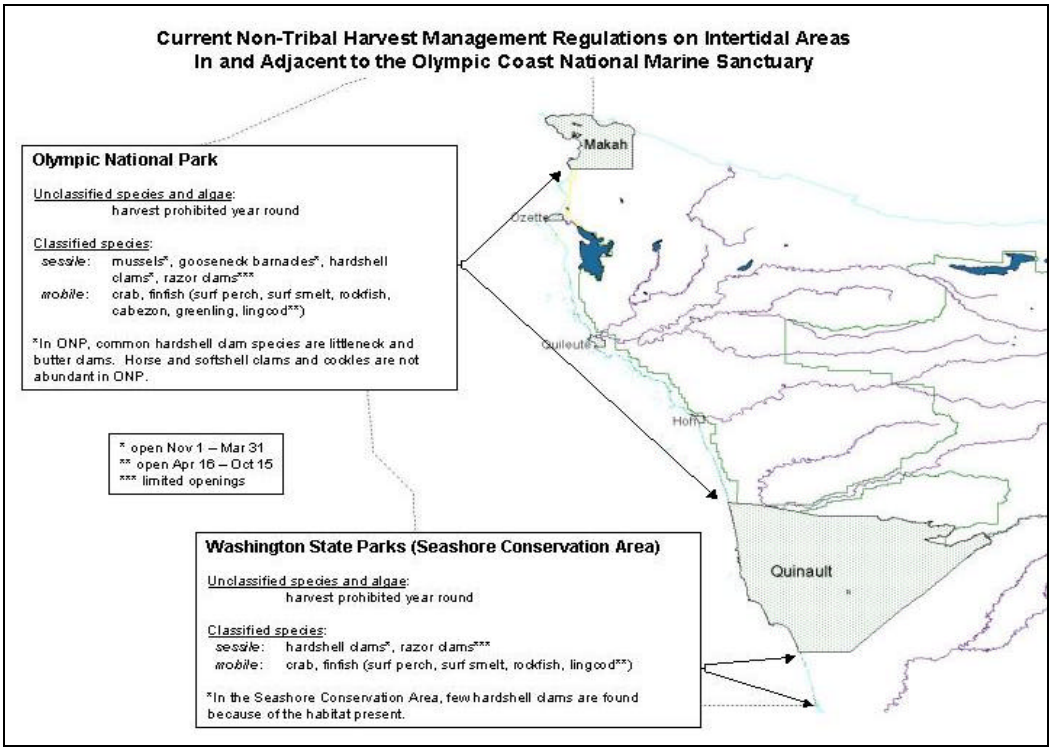

Figure 3. Current non-tribal harvest management regulations on intertidal areas in and adjacent to the Olympic Coast National Marine Sanctuary

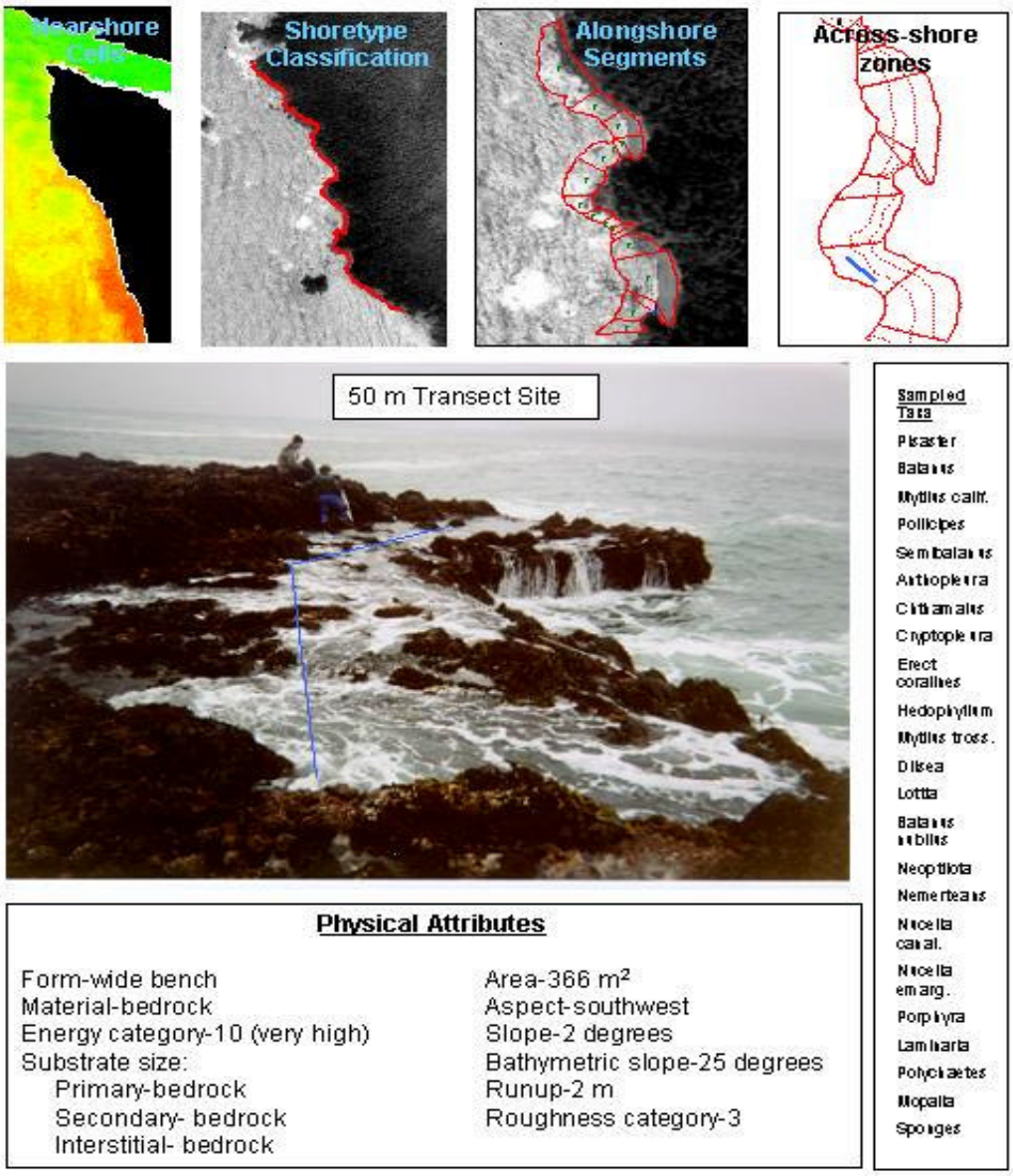

Figure 4. Example of site characterization from Schoch's intertidal database for the Olympic Coast National Marine Sanctuary

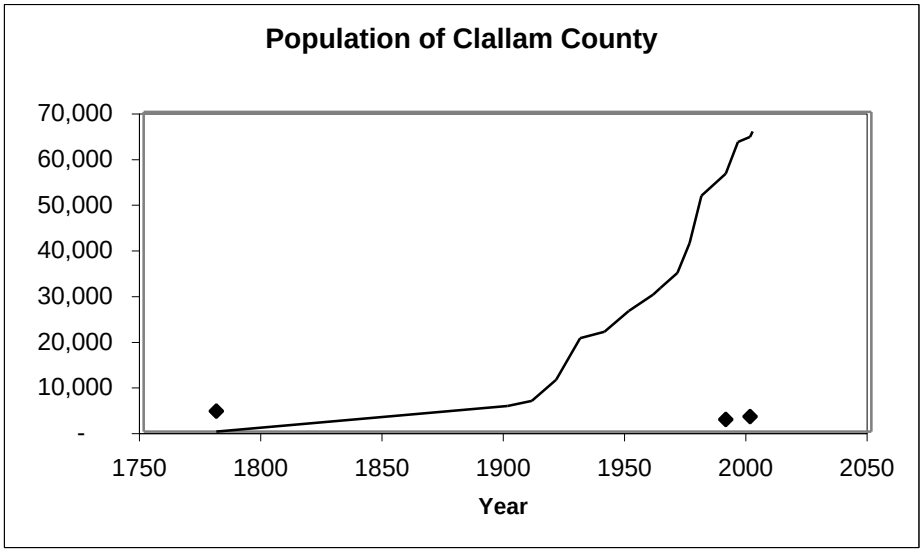

FIGURE 5. POPULATION OF CLALLAM COUNTY, ALL RESIDENTS (LINE) AND NATIVE AMERICANS (DIAMONDS)

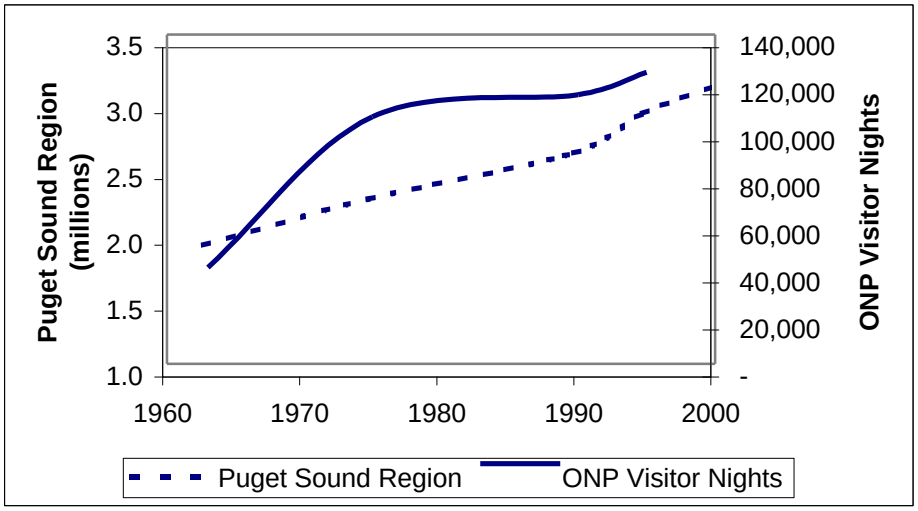

FIGURE 6. POPULATION OF PUGET SOUND REGION AND OLYMPIC NATIONAL PARK VISITOR NIGHTS (BACKCOUNTRY/OVERNIGHT USE)

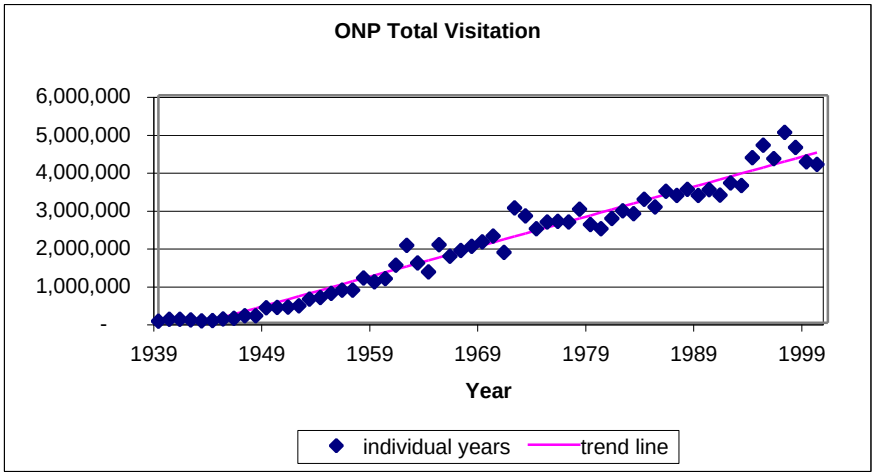

FIGURE 7. TOTAL VISITATION NUMBERS (DAY AND OVERNIGHT USE) IN OLYMPIC NATIONAL PARK

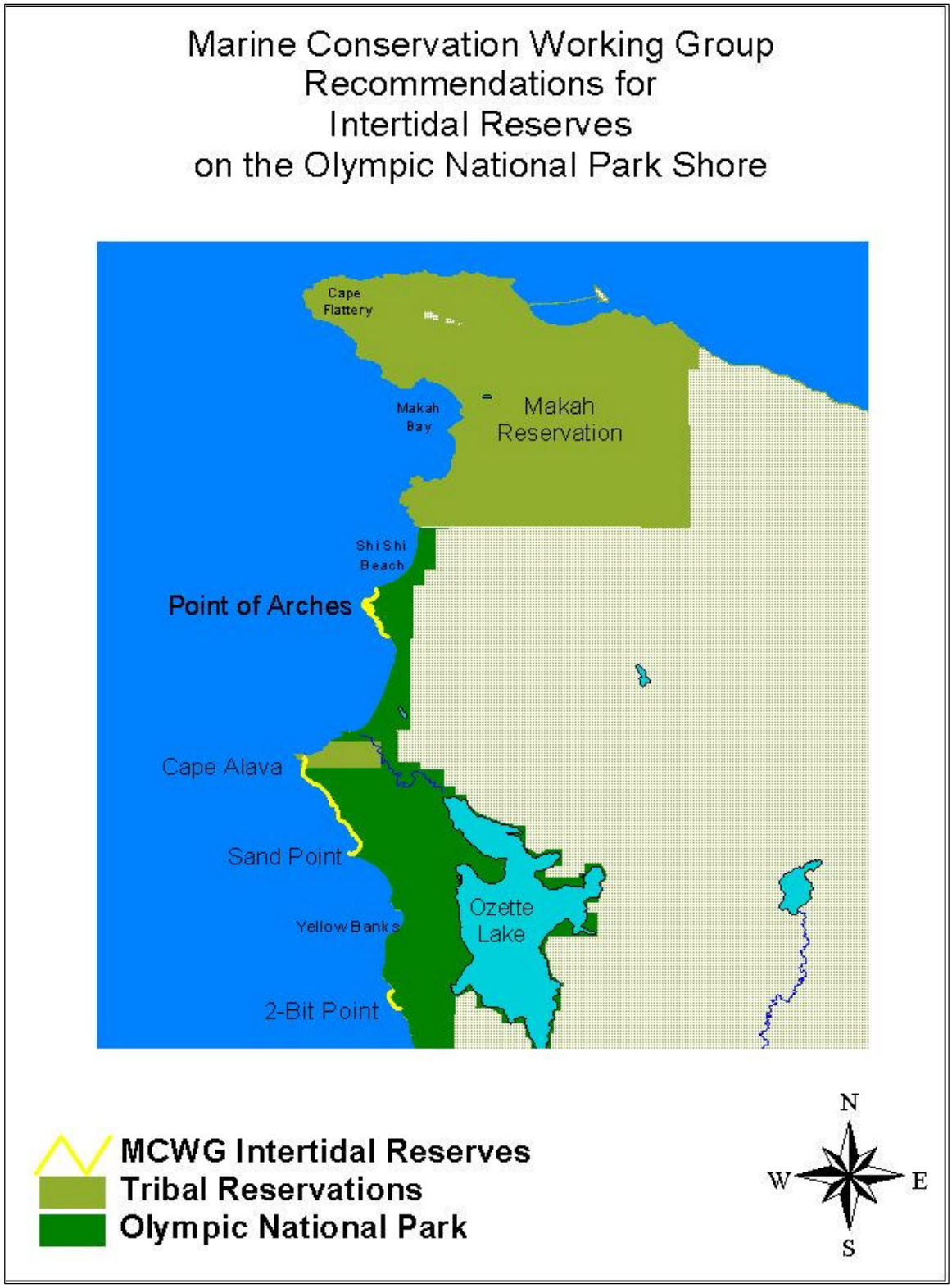

Figure 8. Potential Sites of Intertidal Reserves in the Northern Portion of the Olympic Coast National Marine Sanctuary and Olympic National Park Shore

Figure 9. Potential Sites of Intertidal Reserves in the Southern Portion of the Olympic Coast National Marine Sanctuary and Olympic National Park Shore

APPENDIX A

SUPPORT DOCUMENTS

ACRONYMS, GLOSSARY AND DEFINITIONS

Glossary and Definitions

fully-protected marine reserve - an area of the marine environment that is protected from all fishing and extractive or harmful human uses, including access without permit.[4] [Fully-protected marine reserves are more restrictive than "regular" marine reserves because non-extractive but *harmful* human uses are also prohibited. This definition specifically prohibits access without a permit. Alternative management actions for a fully protected marine reserves could include prohibitions on harvest and turning over rocks (a potentially harmful use), groups larger than 5 people in the lower intertidal zone, or all access except by permit.]

intertidal reserve – a marine reserve designated on the shore, between the extreme high and extreme low tide lines.[5]

marine protected area – any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part of all of the natural and cultural resources therein.[6] [This is a generic category that includes OCNMS as it is currently managed as well as marine reserves and fully-protected marine reserves. An MPA can have any part of the resources within protected. Thus, single species harvest restrictions qualify an area as an MPA, but harvest limitations (e.g., catch limits) do not. Also, MPAs can apply to cultural resources, which are not specifically considered under marine reserves.]

marine reserve - an area of the marine environment that is closed to all forms of fishing and other extractive uses.[7] [The term extractive uses applies to all living and non-living resources. This definition does not specifically consider access (e.g., how many people you allow in the area), limits on various non-extractive activities (e.g., designated paths for group tours, appropriate tide pool etiquette, charcoal rubbings of petroglyphs), and other management considerations that could be addressed through other zone types.]

marine zoning - the spatial separation of different uses and mixes of uses within a marine protected area. [Marine zoning can reduce conflicts, increase resource use efficiency and sustainability, and reduce adverse impacts of human uses by separating incompatible uses.]

MCWG - Marine Conservation Working Group, a group that developed intertidal zoning recommendations forwarded to the OCNMS Advisory Council and OCNMS Superintendent.

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[4] Except for use of "marine environment" to replace "sea" and the clause about access, this definition is from Roberts, C.M. and J.P. Hawkins. 2000. Fully-protected marine reserves: a guide. World Wildlife Fund, Washington D.C. 131 pp.

[5] In April 2001, the Marine Conservation Working Group defined the term intertidal as the area between extreme low water (ELW) and extreme high water (EHW). This includes all lands exposed throughout the year. ELW is the lower extent of ONP and WSPRC jurisdiction.

[6] From Federal Register. 2000. Presidential Documents. Executive Order 13158 of May 26, 2000. Volume 65, No. 105. May 31, 2000. Washington, DC: U.S. Government Printing Office.

[7] This is the definition of "no-take marine reserve" from Roberts, C.M. and J.P. Hawkins. 2000. Fully-protected marine reserves: a guide. World Wildlife Fund, Washington D.C. 131 pp

ACRONYMS, GLOSSARY AND DEFINITIONS

NBSCA - North Beach Seashore Conservation Area, between the Moclips and Copalis Rivers, part of the WSCA under jurisdiction of WSPRC

NGMI - non-game marine invertebrates or unclassified marine invertebrates (see below)

OCNMS - Olympic Coast National Marine Sanctuary

ONP - Olympic National Park

SAC - Sanctuary Advisory Council, the name for which was changed to the Advisory Council in 2003.

unclassified marine invertebrates – all marine organisms that are not designated by WDFW as foodfish or shellfish and not managed by WDFW.

USFWS - United States Fish and Wildlife Service

Usual and accustomed (U&A) ground - an area specific to each Native American treaty tribe where rights to gather fish and shellfish were reserved in perpetuity through treaties with the U.S. government.

WINWR (Washington Islands National Wildlife Refuges) - includes all land above the mean high tide line within Flattery Rocks, Quillayute Needles, and Copalis National Wildlife Refuges, managed by the US Fish and Wildlife Service

WSCA - Washington Seashore Conservation Area, the shoreline between the Quinault Reservation and Grays Harbor, under the jurisdiction of the Washington State Parks and Recreation Commission.

WSPRC - Washington State Parks and Recreation Commission

zone - a discrete area, contained within a protected area that has special guidelines or regulations for activities that differ from guidelines for the larger protected area.

MEETING TIMELINE AND OUTLINE

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Meeting Timeline and Outline

APRIL 2000	Introduction, presentations on Marine Protected Areas Science (Brian Grantham) and Channel Islands Marine Reserves process (Michael Murray)
May 2000	Groundrules, existing zoning, objectives of individual representatives at meeting
July 2000	Presentations on the nearshore habitat GIS database (Carl Schoch), Olympic National Park coastal monitoring (John Wullschleger), WA state and tribal razor clam management (Doug Simons and Joe Schumacker)
September 2000	Review of county Shoreline Master Plans (Lisa Randlette), initial summarization of visitor use data from Olympic National Park
October 2000	Presentation on coastal oceanography (Barbara Hickey), discussion of larval distribution information, initial discussion of group goals
November 2000	Development of vision statement, finalization of goals
January 2001	Presentation of zoning in Florida Keys National Marine Sanctuary (Joanne Delaney), presentation and discussion of GIS-based maps of habitat, organism distribution, cultural and historic resource sites, visitor use levels, discussion of site selection criteria
February 2001	Discussion of jurisdiction, finalization of vision and goals, review of modified habitat, etc. maps, discussion of potential "easy" zoning choices, finalization of site selection criteria, proposal for Technical Advisory Panel
March 2001	Technical Advisory Panel met to recommend high priority sites for conservation and potential sites for a network of intertidal reserves
March 2001	Presentation and discussion of Technical Advisory Panel results, discussion of non-harvest zoning alternatives
April 2001	Presentation on management of Seashore Conservation Area by Washington State Parks (Paul Malmberg), detailed discussion of marine reserve recommendations by Technical Advisory Panel (TAP) within Olympic National Park Met with Quinault Nation representatives
May 2001	FINAL DISCUSSIONS ON MARINE RESERVES IN ONP, IDENTIFICATION OF CURRENT AND POTENTIAL THREATS AND IMPACTS TO BE ADDRESSED BY ZONING, DISCUSSION OF ZONE CLASSIFICATIONS
June 2001	SAC update, Neah Bay
August 2001	Met with Hoh Tribal Council. Met with Makah Tribal Council.
October 2001	SAC update, Sequim/Blyn
February/March 2002	Mandates/Authorities/Treaty Rights letter to Quinault, Hoh, Quileute, and Makah Tribes. Met with Hoh Tribal representatives. Met with Makah Tribal Council and representatives.

Meeting Timeline and Outline (continued)

May 2002	SAC update, LaPush
JULY 2002	Science meeting with Quileute Tribal Council and representatives. Science meeting with Makah Tribal Council and representatives.
SEPTEMBER 2002	MCWG meeting with review of mission and goals, review of process and preliminary decisions on sites for intertidal reserves (with prohibition on extractive use). SAC update, Sequim/Blyn
October 2002	ADDITIONAL DISCUSSION ON INTERTIDAL RESERVES DELINEATION AND ALLOWED ACTIVITIES. LETTERS FROM COALITION OF COASTAL FISHERIES AND OLYMPIC PARK ASSOCIATES. INITIAL DISCUSSION ON EDUCATIONAL SPECIAL USE AREAS/HIGH USE ZONES.
November 2002	SAC update in Seattle. Discussion on intertidal reserve implementation options, high use zones, and fully protected intertidal reserves.
December 2002	Further discussion of intertidal reserve implementation options, discussion of wildlife protection zones.
January 17, 2003	SAC update, Port Angeles update in Port Angeles.
February 2003	Discussion of WA Seashore Conservation Area and zoning for cultural resources. Final determination of level of support for complete set of recommendations
March 2003	Interim Progress Report to SAC`.
October 2003	Final meeting to determine implementation recommendations and level of agreement, Montesano.

Participant List

Participant List

Membership and Contact List

The Marine Conservation Working Group consisted of 10 invited representatives from of county, state, and federal agencies,; plus the commercial fishing, conservation, and research interests; and . In addition, the four outer coast Tribes. had representatives identified as a point contact for the MCWG. BIn meetings between 2000 and 2003, representatives, and alternates, and contact persons changed for some organizations. Invited representatives Members participated at differing levels, ranging from rare attendance and inclusion on the email and mail distribution lists, to rare attendance at meetings, to regular meeting attendance at meetings. This table outlines the membership and provides a general summary of group participation. Some participants, particularly tribal representatives, stated that their presence at meetings or participation in discussions or polling should not be construed as support for the process or any recommendations that were developed by themselves as individuals or as representatives of an agency.

Organization/Agency	Member	Alternate
Clallam County	Mike Doherty (1)	
Commercial Fishing	Geoff Grillo (2)	Doug Fricke (2)
Conservation	Marcy Golde (2)	Kevin Ranker (2) Aaron Tinker (3, 1)
Hoh Tribe	Jim Jorgensen (1)	
Makah Tribe	Steve Pendleton (1)	Vince Cook (1) Dave Sones (1)
National Marine Fisheries Service	Yvonne deReynier (22)	
Olympic National Park	Steve Fradkin (2)	Cat Hoffman (1)
NW Indian Fisheries Commission	Jennifer Hagen (4, 2)	
Olympic Coast National Marine Sanctuary	Carol Bernthal (2)	
Quinault Nation	John Sims (1)	Joe Schumacker (2)
Quileute Tribe	Katie Krueger (3, 1)	Mitch Lesoing (1)
Research	Carl Schoch (2)	
WA Department of Fish and Wildlife	Mary Lou Mills (3. 2); Michele Robinson (2)	Dan Ayres (4, 2)
WA Department of Natural Resources	Lisa Randlette (3, 2); David Roberts (4, 2)	Helen Berry (1)
WA State Parks	Paul Malmberg (2)	
US Fish and Wildlife Service	Kevin Ryan (2)	
Olympic Coast National Marine Sanctuary	Liam Antrim, MCWG Coordinator	
(1) on distribution list		

Participant List

(2) on distribution list, attended some several meeting(s)	
(3) on distribution list; representative attended meeting(s) during earlier portion of process	
(4) on distribution list; attended meeting(s) representative during later portion of process	

CULTURAL RESOURCES CONSULTATION

CULTURAL RESOURCES CONSULTATION

CULTURAL RESOURCES EXPERT DISCUSSION - CONFERENCE CALL NOTES

The Marine Conservation Working Group (MCWG) serves under the Sanctuary Advisory Council of the Olympic Coast National Marine Sanctuary (OCNMS) and is tasked with developing recommendations for intertidal zoning for the federal shoreline on the outer coast of Washington. Thus far, the MCWG has focused on existing and potential threats to biological resources and habitats, and management actions to minimize widespread, incremental degradation of intertidal areas. Most MCWG participants, however, are largely unfamiliar with the location, abundance, and diversity of cultural resource sites on the outer coast, as well as the intricacies associated with management of these cultural resources. Cultural resources include both ancient and modern artifacts of Native American inhabitants, as well as shipwrecks, monuments, and other historic features of post-contact culture.

To support the work of the MCWG, a conference call was hosted by OCNMS on 23 January 2003 for which cultural resource experts from coastal Tribes, state, and federal agencies were assembled for discussions. The conference call was attended by:

- Janine Bowechop and Rebecca Monette, Makah Cultural and Research Center
- Dave Conca, Paul Gleeson, and Jacilee Wray, Olympic National Park
- Jennifer Hagen, Northwest Indian Fisheries Commission
- Justine James, Jr., Quinault Nation
- Lee Stilson, Washington Department of Natural Resources
- Vi Riebe, Hoh Tribe
- Gary Wessen, consulting archaeologist, Wessen Associates
- Rob Whitlam, Washington Office of Community Development
- Bob Steelquist and Liam Antrim, OCNMS (facilitators and note keepers).

This group considered the fundamental question "Would protection of cultural resources be improved with the designation of intertidal zones in selected areas and consideration of special management measures?" To focus discussion, this issue was elaborated in seven questions posed to the group. To facilitate the conference call coordination, questions were addressed sequentially with each participant responding to the question at hand before progressing to the next question. The questions posed were:

1. Are there ways in which you feel that intertidal zoning can be useful? Examples might include for consideration of visitor quotas to selected areas, educational purposes, oil spill response, and review of development applications.
2. What level of sensitivity do you have associated with public identification of cultural resource sites and their locations?
3. If cultural resource zones are recommended, how broad an area should be included? For example, would large areas that may encompass several identified resources (e.g., Ozette to Sand Point) be useful for descriptive and educational purposes? Or, should such zones be restricted to a small area around a specific site (e.g., Wedding Rocks)? What values do each of these approaches offer (as asked in #2 above)?

4. How could intertidal zoning help to manage the security of selected cultural resources?
5. Would a reasonable initial approach be to recommend a test or pilot cultural resource zone at a specific site?
6. Is recognition of cultural resource sites distinct from NHPA necessary or useful?
7. Does NHPA allow for the mechanisms sought in intertidal zoning? (which was rephrased as might intertidal zoning compromise the integrity of NHPA listing?)

Cultural resources on the outer coast of Washington include monuments (Norwegian and Chilean Memorials), shipwreck remains, Native American archaeological materials, petroglyphs, canoe runs, and a suite of things classed as traditional cultural properties (e.g., named locations, use sites).

The following is a summary of discussion. Detailed notes covering comments of individual participants to each question are provided below.

Main Themes

- A basic site iInventory is lacking. Inventory will better define what's there, and it should be followed by an assessment of current status and impacts. Management actions to enhance protection logically follow inventory and assessment.
- The management objectives of zoning for cultural resources are not clearly defined. It would be difficult to identify sites to consider for zoning without first defining the purpose(s) of management actions associated with a specific zone.
- Zoning could be a useful means of prioritizing rare resources (i.e., staff and funding) for enforcement, monitoring, and data collection.
- A pilot project for a cultural zone might be of value, but management objectives need to be defined.
- Use of the National Historic Preservation Act to nominate sites for the National Register of Historic Places focuses on discrete properties, rather than broader areas or cultural zones. There do not appear to be conflicts between the NHPA process and potential cultural resource zoning.

Threats

- Oil spill response, specifically activities associated with both mobilization/deployment and clean up, was identified as posing a significant threat to cultural resources on the shore. Cultural resources are not well identified in the outer coast Geographical Response Plan (GRP). Cultural resource specialists should be included in the Incident Command structure. Cultural resource zoning could possibly provide increased protection from this threat by identifying areas of sensitivity.
- Some trailheads could be relocated to reduce impacts. GET EXAMPLES FROM JUSTINE
- Beach debris poses a threat to cultural resource sites (e.g., mooring buoy damage to Wedding Rocks petroglyphs) that can be better managed.
- Pilfering of middens and theft of historic artifacts have occurred on the Park's marine shores.

CULTURAL RESOURCES CONSULTATION

Site Identification

- In general, cultural resource managers are reluctant to identify the location of sites.
- In practice, managers have found that site identification and signage immediately at sites invites disturbance.
- Opportunity to instill a stewardship ethic for cultural resources should be used, but it is best done at a distance from cultural resource sites, for example at trailhead signs, at cultural resource centers, or by rangers during orientation or interpretive walks.
- Not all sites are equally vulnerable to visitor disturbance. Less vulnerable sites could tolerate disclosure.

Management Objectives

- Clear definition of management objectives is necessary before zoning can be recommended or implemented.
- Increased interpretive staff is important, or better focus on stewardship of cultural resources. One simple step would be better orientation for Park rangers.

ADDITIONAL COMMENTS

- Pre-contact cultural use of the shore was complex, but our understanding of this is poor. We need to better understand the role of humans on the coast before we can regulate use.
- The distinction between natural and cultural resources is an artificial dichotomy. Human use through time should be examined, and this understanding incorporated into management planning
- IT IS DIFFICULT TO ISOLATE FOCUS ON THE INTERTIDAL ALONE. CULTURAL RESOURCES TEND TO SPAN A WIDE AREA AT SITES FROM UPLANDS, HIGH BEACH (E.G., MIDDEN SITES), INTERTIDAL, AND NEARSHORE REEF AREAS.
- Management measures for protection of cultural resources will be difficult to enforce.
- Improved monitoring, enforcement, and outreach should be implemented to reduce pilfering of middens, artifact theft, and other cultural resource disturbance.
- Broad cultural zones might work to identify areas (e.g., historical village sites) and to educate about "cultural landscapes". Cultural resources tend to be clustered in historical use areas. If these are to be identified or designated, the Tribes should lead this effort.
- Historic sites (e.g., shipwrecks, memorials) are more discrete and better lend themselves to small zone designation.

Analysis

This group of cultural resource specialists had a high degree of consensus that better inventory of sites and resources is essential. We could also benefit from an improved understanding of the varied human uses of the shore and the influence of humans on the shore's ecology. However, many expressed uncertainty about the purpose, the management objectives, of intertidal zoning for cultural resources. Experience has generally confirmed that identification of sites leads to

increased disturbance and serves to degrade rather than preserve many cultural resources. A public well informed of the values, sensitivity (to disturbance), and regulations associated with cultural resources is an essential component of their preservation. Thus, more effective interpretive efforts, through rangers, trailhead signs, and visitor centers, could enhance public stewardship. Signs directly at selected sites are not effective, nor is enforcement likely to be, given the remote nature of most sites. Small cultural resource zones at sites not vulnerable to disturbance (e.g., memorials or large shipwreck parts) might not have negative impacts, but the management objectives for such zones is unclear. Larger "cultural landscape" zones could be useful for outreach and education, while avoiding the risk of identifying the locations of specific artifacts or sites. Because these primarily would be village sites, Tribes are the appropriate lead authority for such an effort.

CULTURAL RESOURCES CONSULTATION

Responses to Specific Questions

1. Are there ways in which you feel that intertidal zoning can be useful? Examples might include for consideration of visitor quotas to selected areas, educational purposes, oil spill response, and review of development applications.

Janine Bowechop, Rebecca Monette Makah THIPO	Unsure without specific mgmt objectives. Could be useful for oil spill planning and response. Would vary site by site; Wedding Rocks seems better off without signage and widespread recognition.
Gary Wessen Makah THIPO, Wessen Associates	This puts cart before the horse. We lack basic inventory data. The resource should be managed but we shouldn't get ahead of inventory and assessment.
Viola Riebe , Hoh Tribe	Listened but didn't comment because of cold and weak voice.
Justine James, Quinault Nation	Agreement about importance for oil spill planning and response.
Lee Stilson, DNR	We know very little about site distribution. Zoning might an effective tool for protecting areas of high probability before resources are precisely known.
Rob Whitlam, SHIPO	Oil spill protection is very important. Cultural resources need to be identified in geographic response plans (GRP). Cultural resource managers need to be part of Incident Command structure. Agreement with need for inventory to establish baseline conditions.
Paul Gleeson, ONP	Reiteration: what are management objectives? Understanding precontact cultural use of areas is poor and but use was very complex. Zones based on what we know would not reflect this complexity. Need to know more about role of human interactions and effects in habitats before we regulate against all use. Fire in parks as example.
Jacilee Wray, ONP	Coast Guard is working on GRP now; cultural resources group provided input earlier but not sure of current status. Tribes, ONP, and OCNMS could have areas of responsibility and oversight identified in GRP and Incident Command structure. How could tribes play a role in monitoring CR zones? This could help establish a database. How could tribes play a role in monitoring CR zones?
Dave Conca, ONP	Comfort level with zoning for cultural resourcese not there yet. We need basic inventory information and baseline.
Jennifer Hagan, NWIFC	No comment

2. What level of sensitivity do you have associated with public identification of cultural resource sites and their locations?

Janine Bowechop, Rebecca Monette Makah THIPO	Makah dDon't identify sites precisely; it invites disturbance. The trend is toward less identification (signage). Education should be more direct (attended)
Gary Wessen, Wessen AssociatesGary Wessen Makah THIPO, Wessen Associates	General education about cultural resource values is important but it is difficult. Not all sites are equally vulnerable; some are robust, some subject to vandalism. Some could tolerate disclosure, others not. Disclosure of robust sites, e.g., canoe runs, could increase public sensitivity.
Viola Riebe , Hoh Tribe	N/C
Justine James, Quinault Nation	Agrees. Suggests that some trails should be relocated to reduce impacts.
Lee Stilson, DNR	There are education opportunities that don't require precisely locating sites. Emphasize the landscape scale.
Rob Whitlam, SHIPO	Education and outreach is important, depends on specific area. People are fascinated by CR. The challenge is to design education appropriately.
Paul Gleeson, ONP	Park signage usually is "thou shalt nots." CR story should be integrated in intertidal area as a whole. Education should focus generally on resources at risk. At Wedding Rocks, less signage led to less damage. Education programming can be focused off-site. If zones are proscriptive, how do we enforce?.
Jacilee Wray, ONP	Middens are now being pilfered and historic objects removed. We should fund monitoring program, increased enforcement and outreachs.
Dave Conca, ONP	Monitoring is a good idea. Leery of more signs and identification of sites.
Jennifer Hagan, , NWIFC	N/C

3. If cultural resource zones are recommended, how broad an area should be included? For example, would large areas that may encompass several identified resources (e.g., Ozette to Sand Point) be useful for descriptive and educational purposes? Or, should such zones be restricted to a small area around a specific site (e.g., Wedding Rocks)? What values do each of these approaches offer (as asked in #2 above)?

Janine Bowechop, Rebecca Monette Makah THIPO	Broader zones would seem more feasible. We have difficulties identifying specific resources. Trailhead kKiosks could identify broad resources without as much potential for harm.
Gary Wessen Makah THIPO, Wessen Associates	Zones would have to be sized according to purpose. We need better data, but resources seem to be clustered. Lends itself to "cultural landscapes." Intertidal areas shouldn't be seen as separate from upland or offshore. Suggests zones be broader as data get broader. Manage multiple resources as a whole.
Viola Riebe, Hoh Tribe	N/C
Justine James, Quinault Nation	Broader areas would seem more beneficial. Federal laws provide for enforcement and monitoring, which is necessary at CR sites.
Lee Stilson, DNR	Agrees with Gary. Sensitivity of resource should dictate management, including size. But we should be dealing at a landscape scale.
Rob Whitlam, SHIPO	Agrees with previous comments., pass.
Paul Gleeson, ONP	Poorly defined zones don't define what's valuable. Broad zones might not be helpful. Need to focus on more than historic "fabric." Need to look at cultural uses. Should focus on harvest areas and village sites. Should look at cultural use to understand. Units should include terrestrial and offshore. We need clear criteria on what we expect to find and what we want to manage.
Jacilee Wray, ONP	If tribal, then tribes should delineate—four tribes, four delineations. Historic sites would be more discrete (shipwrecks, memorials).
Dave Conca, ONP	N/C
Jennifer Hagan, NWIFC	N/C

4. How could intertidal zoning help to manage the security of selected cultural resources?

Janine Bowechop, Rebecca Monette Makah THIPO	Earlier comments. Oils spill response planning would be best use.
Gary Wessen Makah THIPO, Wessen Associates	Zoning could lead to prioritizing resources for enforcement (where CR concentrated, where damage occurring), monitoring and data collection. Also, zoning could help leverage funding. With funding short, zoning might be a way to prioritize.
Viola Riebe, Hoh Tribe	N/C
Justine James, Quinault Nation	N/C

Lee Stilson, DNR	With monitoring, it doesn't have to be like surveillance;, it can project the fact that you know what's going on even if you aren't watching all the time.
Rob Whitlam, SHIPO	Zoning might help if you actually get a NRPA case, may help to get funding. Surveillance wouldn't be that far off. Knowledge of zoning could increase visitor awareness of "rules" for proper conduct.
Paul Gleeson, ONP	Zoning could help the allocation of resources. It might help prioritize beach cleanup. We could monitor more during the winter. And we don't have a plan that identifies risks to cultural resources from beach debris or flotsam (example of mooring buoy that damaged petroglyphs)
Jacilee Wray, ONP	We need more education positions, like Shane's (Makah tribal interpreter funded by sanctuary), more interaction with public.
Dave Conca, ONP	It doesn't have to be expensive, we could better educate Park rangers or use priorities to leverage more funding.
Jennifer Hagan, NWIFC	N/C

5. Would a reasonable initial approach be to recommend a test or pilot cultural resource zone at a specific site?

Janine Bowechop, Rebecca Monette Makah THIPO	Paul, Gary or Dave should make the recommendation, based on technical expertise.
Gary Wessen Makah THIPO, Wessen Associates	There is value to pilot projects but—we need a better understanding of resources and their condition and the whole range of management measures that would complement this.
Viola Riebe, Hoh Tribe	N/C
Justine James, Quinault Nation	We need more study; baseline information is lacking. It should be up to the tribal groups to nominate.
Lee Stilson, DNR	Piloting would be good, given the right scale and the right conditions.
Rob Whitlam, SHIPO	It's important to get a field presence for the Sanctuary. We need to get data and devise plans for monitoring.
Paul Gleeson, ONP	We should first define management objectives. What is the purpose? What sites? What impacts? And what would zoning accomplish as additional protection? We need an overall zone sense that recognizes overlapping interests.

Jacilee Wray, ONP	If the Cape Alava area were zoned for natural resources then it would make sense to also recognize cultural values. (note: ”Cape Alava” area includes parts of Ozette Reservation. Tribal sovereignty is recognized here. No zoning would be imposed on reservation lands unless so designated by tribe.)
Dave Conca, ONP	Permit systems (like at Ozette) allow for some education about stewardship, although itemphasis varies between rangers.
Jennifer Hagan, NWIFC	N/C

6. Is recognition of cultural resource sites distinct from NHPA necessary or useful?

Janine Bowechop, Rebecca Monette Makah THIPO	Not sure
Gary Wessen Makah THIPO, Wessen Associates	It's comparing apples and oranges. National Register doesn't impose much in the way of management strategies. But the benefit goes above and beyond. It would depend on how the site is nominated, specific site or larger district. Better data will lend themselves to broader areas. Not much on the coast has actually been nominated.
Viola Riebe, Hoh Tribe	N/C
Justine James, Quinault Nation	The resources themselves determine eligibility. Nomination doesn't necessarily increase protection.
Lee Stilson, DNR	National Register relates to significance. State law (27.53 RCW) protects sites whether they are on the register or not. Many sites haven't been evaluated.
Rob Whitlam, SHIPO	De facto, Nnational Rregister is common currency. National Park Service seems to be focusing on listing discrete properties rather than broader areas. Large areas might be harder to designate. Probably need other strategy than NHPA. Fore example, NEPA can be used and is much broader.
Paul Gleeson, ONP	It is good to keep the concept of cultural resource management somewhat separate from "register" resources. We need to understand the nature of register property vs cultural property.
Jacilee Wray, ONP	N/C
Dave Conca, ONP	N/C
Jennifer Hagan, NWIFC	N/C

7. Does NHPA allow for the mechanisms sought in intertidal zoning? Rephrased as: might intertidal zoning compromise the integrity of NHPA listing?

Janine Bowechop, Rebecca Monette Makah THIPO	It is not clear.
Gary Wessen Makah THIPO, Wessen Associates	We would need to know what management plans are about. But I can't envision degrading the integrity of a site. No conflict seen.

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Viola Riebe, Hoh Tribe	N/C
Justine James, Quinault Nation	As a federal action, would zoning trigger NEPA?? (Answer probably yes)
Lee Stilson, DNR	It shouldn't compromise zoning. That would depend on management goals.
Rob Whitlam, SHIPO	There is some potential for adverse effects – indirectly – if zoning displaces impacts, it could force use to presently underused areas.
Paul Gleeson, ONP	Citing NHPA and Bulletin 38 regarding Traditional Cultural Properties. Can include traditional practices of any communities, thus, – harvest activities like smelt gathering could be considered "traditional cultural practices" that are protected. It's a fine line, but you could lessen impacts without completely impacting traditional cultural practices
Jacilee Wray, ONP	N/C
Dave Conca, ONP	Displaced impacts could be a factor.
Jennifer Hagen, NWIFC	N/C

Final Comments:

Janine Bowechop, Rebecca Monette Makah THIPO	You would want to include Tribal Natural rResources and enforcement.
Gary Wessen Makah THIPO, Wessen Associates	I'm pleased with what appears to be a consensus. Paul's observations on beach debris as a destructive element is something we should address.
Viola Riebe, Hoh Tribe	I'm pleased to have listened. I see real importance in protecting our resources from oil spills by working with Coast Guard and tribal oil spill plans. Our very existence depends on seafood.
Justine James, Quinault Nation	Let's continue the dialog.
Lee Stilson, DNR	I'd like to see the results of the intertidal zoning discussion.
Rob Whitlam, SHIPO	We should be encouraging this effort and keep building on NOAA's submerged cultural resource efforts. We need to continue to inventory.
Paul Gleeson, ONP	This should be part of a larger planning process. Perhaps like the Marine Conservation Working Group there should be a Cultural Resources Working Group.

Jacilee Wray, ONP	Generally, the distinction between natural and cultural resources is an artificial dichotomy that doesn't really exist. We need to be looking at the reconciliation of human use throughout time. We should examine this closely.
Dave Conca, ONP	Any opportunity to increase our inventory activities would be good.
Jennifer Hagen, NWIFC	Thank you for opportunity to listen.

OUTREACH AND COMMUNICATIONS PLAN

Introduction

Note: this draft document was last updated January 2002. A public outreach process for intertidal zoning was implemented to inform the public and to solicit input from stakeholders and resource users. At the outset, OCNMS staff worked with the MCWG to outline goals and objectives of an outreach and communications strategy including needs and opportunities for outreach and public involvement, as well as to identify critical stakeholders and crucial issues. As the process has moved forward, staff have developed this plan for an outreach and communications campaign to support the work of the MCWG. This will take the form of articles in local publications, public meetings, and directed outreach to government and civic groups when recommendations are better defined by the MCWG.

The Outreach and Communications Plan consists of the following elements:

1. Goal of Outreach and Communications Plan
2. Objectives
3. Identification of critical audiences
4. Identification of crucial issues
5. Outreach and communication strategies
6. Timelines and progress points for implementations

Goal

Develop "informed consent" for intertidal habitat protection recommendations developed by the MCWG. Informed consent means "willingness –perhaps without enthusiastic support - to go along with a necessary course of action."

Achieving this goal will require effective communication of the following points:

- There is a real opportunity...or serious problem… that has to be addressed.
- OCNMS is the right entity to be addressing this problem. It would be irresponsible of OCNMS not to address this problem.
- Our approach is reasonable, sensible and responsible.
- We are listening, we do care. If some interest is impacted, its not because we don't care or because we are not listening.
- Balance across user groups is optimal, which may require some forfeit for the good of the resources.

Objectives

1. Establish and maintain legitimacy of the project and OCNMS as project lead
2. Establish and maintain legitimacy of earlier assumptions and decisions
3. Establish and maintain legitimacy of the problem-solving and decision-making process
4. Get to know all the potentially-affected interests and see the project through their eyes
5. Identify and understand problems

6. Generate alternative solutions
7. Articulate and clarify key issues
8. Protect and enhance our credibility
9. Communicate effectively to interests and understand their communications to us
10. De-polarize all potentially-affected interests

Critical Audiences

The following list was initially generated with input from MCWG members and OCNMS staff. It is a "living" list, in that it should be augmented and modified as new information is brought forth.

MCWG Participants
National Park Service, U.S. Fish and Wildlife Service, WA Dept. of Natural Resources, WA Dept. of Fish and Wildlife, Washington State Parks and Recreation Commission, Makah, Quileute, Hoh, and Quinault Tribes, Clallam and Grays Harbor Counties, OCNMS, Conservation Commissions

Native American Tribes
Natural resources and fisheries departments, Tribal Councils, health, law enforcement, legal, planning, education, economic development/enterprise, marinas, cultural resource committees, subsistence users

Marine Resource Committees
Clallam and Jefferson Marine Resource Committees, Northwest Straits Commission

Agency Staff
Professional staff among local governments, Tribal, state and federal agencies. This includes professional peers and counterparts, policy managers, attorneys, technical staff, and professionals in other agency divisions and regions

Researchers
Universities, Olympic Natural Resources Center, state and federal agencies, misc. societies, National Oceanographic and Atmospheric Administration, National Estuarine Research Reserve (NERR) offices, private consultants

Recreational Users
Shellfish license holders, scuba divers, hikers, campers, day-users, surf fishers, boaters, naturalists, smelt dippers, surfers, kayakers

Business/Industry
Landowners, timber, resorts, motels, restaurants, Chambers of Commerce, charter boats, tackle and marine supply, commercial fishers, B & Bs, dive shops, other small businesses. Provincial Interagency Executive Committee, Olympic Province Advisory Committee.

OUTREACH AND COMMUNICATIONS PLAN

Intra-NOAA
National Ocean Service, National Marine Sanctuary Program, other sanctuaries, Sanctuary Advisory Councils, National Marine Fisheries Service, National Estuarine Research Reserves, National Centers for Coastal Ocean Science, Coastal Services Center, Special Projects Office

Educators
Field trip teachers, Olympic Park Institute, local schools, community colleges, tribal schools and programs, University of Washington

Conservation Groups
Olympic Peninsula Audubon, National Parks Conservation Foundation, National Audubon, Center for Marine Conservation, Washington Environmental Council, Surfrider Foundation, Environmental Defense Fund, Marine Conservation Biology Institute, The Nature Conservancy, Ocean Advocates, People for Puget Sound, Friends of Grays Harbor, Olympic Park Associates

Local Residents
Regular site users, Peninsula Daily News readers, The Daily World readers, service organizations, city councils, national park inholders, county commissioners, aviators

Animal Groups
People for the Ethical Treatment of Animals, Humane Society, rehabilitation groups, marine mammal groups.

Elected Officials
Congress, legislature, state government, Coastal Caucus members, county commissioners, city council members

Crucial Issues

At its early meetings, the MCWG identified a wide range of issues that could be expected to emerge as the process moved forward. The following list represents a "lumped" version of the highest priority issues identified. In addition, throughout the process several issues have repeatedly provoked lengthy committee discussion, thus bearing out earlier assumptions about their importance.

This list represents areas of concern that will require careful analysis and very clear communication of factual and technical information.

- Treaty Rights
- Definition of and Proposed Limitations on Current Uses
- Additional Regulation
- Scientific Validity of Recommendations
- Monitoring
- Enforcement
- Implications for Offshore Marine Zoning
- Jurisdictional Confusion State/Federal
- Effects on Tourism and Business

- Effects on Public Access

Strategies

A. Advisory Committee—Both the SAC and the MCWG represent efforts to develop policy and management recommendations in collaboration with critical partners and stakeholders. Because of the broad base of membership on both the SAC and the MCWG, the opportunity for substantial influence early in the process is fairly high. Both the SAC and the MCWG can serve as vehicles for reporting out to constituents.

   Tasks:

   1. Establishment of Marine Conservation Working Group
   2. Presentations by MCWG to constituents
   3. Presentations by SAC members to constituents
   4. SAC hosting of key meetings
   5. SAC support for OCNMS at public meetings

B. Develop Informational materials—Publications including fact sheets, maps, slide shows and other audio-visual tools are an efficient way to disseminate basic information about the process, its objectives and the recommendations of the MCWG and SAC.

   Tasks:

   1. Create a fact sheet on marine zoning
   2. Create a fact sheet on Olympic Coast intertidal habitats
   3. Create resource maps
   4. Create zoning maps (based on recommendations)
   5. Develop message points
   6. Create PowerPoint and slide presentations for staff presentations

C. Work with existing organizations—Communicating directly with stakeholder groups is both effective and efficient. Messages can be tailored to groups' unique perspectives, and substantive issues can be dealt with even if the focus is narrow. In addition, many existing groups exercise substantial jurisdictional authority—their support or opposition can be clearly defined.

   Tasks:

   1. Government to government consultations with Tribes
   2. Consultations with trustee agencies
   3. Consultations with local government staff and presentations to governing bodies (County Commissioners and City Councils
   4. Outreach to nonprofits and community organizations
   5. Outreach to professional organizations through conferences, listserves, newsletters and meetings

D. Web Site—The OCNMS website (www.ocnms.nos.noaa.gov) reaches a very broad audience including process participants, associated agency staff and the general web-savvy public. The website allows the presentation of text, maps and other graphics and provides links for e-mail communication back to the Sanctuary staff.

Tasks:

1. Post MCWG meeting notices
2. Post MCWG Meeting Minutes
3. Post recommendations, supporting maps and graphics, and other background information and documents

E. Media Outreach—Media outreach, particularly to local and regional news organizations, provides another broad-spectrum information dissemination tool. The Peninsula Daily News, The Aberdeen Daily World and weekly newspapers in Port Townsend, Forks, Ocean Shores, and Sequim reach many local users of Sanctuary resources.

Tasks:

1. Develop media background information materials (e.g., press kit)
2. Develop press release for recommendations release date
3. Public notification of meetings
4. Develop press release for open house

F. Open House—The "open house" format for a public event is an excellent opportunity to showcase the work of Sanctuary staff, the SAC and the MCWG in an informal setting that can be attended by many people with different interests. The "open house" is preferable to the formality of a public hearing because it is less confrontational, allows individuals to ask questions directly to staff and participants, and lets a broad segment of the public provide feedback directly.

Tasks:

1. Conduct public open houses in Port Angeles, Forks, Seattle and Grays Harbor

G. High level consultations—Direct briefings to key decision-makers is essential. These briefings will be made by the Sanctuary Superintendent and key staff and representatives of the SAC and MCWG.

Tasks:

1. Pre-release briefings to Congressional staff
2. Pre-release briefings to key agency staff
3. Pre-release briefings to Tribal Councils
4. Others as necessary

OUTREACH AND COMMUNICATIONS PLAN

Summary of MCWG Outreach Activity

MCWG Meeting Announcements to local newspapers were submitted regularly to Peninsula Daily News (Port Angeles), Port Townsend Leader, and The Daily World (Aberdeen).

COMPASS (Communication partnership for Science and the Sea) meeting and follow up West Coast Marine Reserves Coordinating Committee, participation by Liam Antrim, OCNMS, in August 2000. Information about MCWG was posted on the COMPASS web site.

Puget Sound Research 2001 Conference. Presentation by Liam Antrim, OCNMS, in Bellevue, WA, February 14, 2001

NGO/OCNMS forums hosted by Marcy Golde in March 2001 and April 2001 to familiarize local NGOs on important sanctuary issues.

Jefferson County Marine Resources Committee. Presentation and discussion by Andy Palmer, OCNMS, in Port Townsend, April 2, 2001.

George W. Wright Conference. Presentation on the MCWG process and the OCNMS-ONP linkage by Steve Fradkin, ONP, April 17, 2001.

Olympic Park Associates Newsletter article by Liam Antrim, OCNMS, on the intertidal zoning process.

Clallam County Marine Resources Committee. Presentation by Liam Antrim, OCNMS, in Port Angeles, WA, June 18, 2001.

Second Symposium on Marine Conservation Biology. Poster presented by Liam Antrim, OCNMS, in San Francisco, CA, June 21-26, 2001.

Washington MPA Coordinating Group hosted by Ginny Broadhurst, PSWQAT, participation by Liam Antrim, OCNMS, at meetings in 2001 and 2002.

Island County Marine Resources Committee. Presentation by Liam Antrim, OCNMS, in Freeland, May 2002.

WRITTEN COMMENTS RECEIVED BY OCNMS

The following letters were received by OCNMS concerning the intertidal zoning process of the MCWG. These documents are provided in chronological order received.

In addition to these comments, a "Special Places" campaign sponsored by the Surfrider Foundation was directed at Olympic National Park. This campaign was launched in August 2002 that encouraged concerned citizens to write the park Superintendent in support of including intertidal reserves in ONP's General Management Plan review. A draft letter is provided below. In response to this effort, ONP received hundreds of comments from constituents.

Subject: I support increased marine protection in the Olympic National Park

Dear [Decision Maker] ,

We need your leadership in preserving the natural and recreational resources of Washington's wild Olympic Coast. Those of us who frequent Washington's Olympic coast may do so for different reasons, but we all value its importance and cherish our ability to enjoy it - this is our coastal legacy. As you are well aware, growing demands on these sensitive places threaten the health of our marine ecosystem and the fabric of our coastal legacy.

Through the Olympic National Park's General Management Plan revision process we have a historic opportunity to protect special coastal and ocean places through the establishment of coastal marine protected areas through implementation of a network of intertidal reserves that limit harvest and promote marine education and research.

I support greater protection of Washington's wild Olympic Coast and urge you to create a network of marine protected areas in the Olympic National Park in order to:

Enhance the coastal experience by preserving wild recreational areas. Full enjoyment of marine wilderness by surfers, divers, kayakers and other non-extractive users can only be achieved through the implementation of fully protected marine reserves. Recreational fishing is also part of the coastal legacy and that legacy is jeopardized by declines in fisheries. Not all marine protected areas are "no-take" marine reserves, and a tiered system of protected areas best reflects all the recreational values of the coast and ocean.

Protect special coastal and ocean places from ocean pollution, fisheries mismanagement and water quality problems, while promoting marine education, recreation and research. Current and future generations deserve special coastal places where we can immerse ourselves in a natural setting.

Restore ecosystem health in marine, estuarine and beach habitats. Recognition of our goal to protect special places requires controlling what is added to the environment as well as what is removed.

Show the rest of the nation that the Olympic National Park is a leader in protecting its coastal and ocean environment. Others will follow your example, and our grandchildren will thank you.

Sincerely,
[Your Name]

Quinault Indian Nation

POST OFFICE BOX 189 ☐ TAHOLAH, WASHINGTON 98587 ☐ TELEPHONE (206) 276-8211

May 15, 2001

Carol Bernthal, Superintendent
Olympic Coast National Marine Sanctuary
138 West 1st Street
Port Angeles, WA 98362

Re: Meeting with Quinault Nation on April 30, 2001

Dear Carol,

We appreciate your meeting with representatives of the Quinault Indian Nation (QIN) to discuss the status of work relating to the Olympic Coast National Marine Sanctuary (OCNMS). However, we are extremely disappointed with the manner in which identification of potential "no take" reserves was handled and the Sanctuary's decision to wait until the eleventh hour to share this information.

Consultations with tribal governments should have occurred before the adoption of the "science panel" approach employed by the OCNMS. Early consultation would have avoided unfortunate and ill-advised decisions to ignore the jurisdictional limitations established when the OCNMS was created and to exclude tribal scientists from the technical panel's efforts. We strongly object to the development of recommendations for "no take" reserves within Quinault tribal usual and accustomed fishing and gathering areas and the Quinault Indian Reservation outside of the boundaries the OCNMS without such government to government consultation.

For a number of reasons the designation of "no take" reserves within the Quinault Reservation and tribal usual and accustomed fishing places, is simply outside the scope of OCNMS's authority.

(a) There is no authority for the OCNMS to zone intertidal areas within Indian Reservation, state, or private lands - the shoreward boundary was specifically established so as not to interfere with tribal or state management of Reservation, state, local, and private tidelands;

(b) The designation document establishing the OCNMS acknowledges that treaty rights of the coastal tribes will not be impacted and that tribal members are entitled to continue to exercise aboriginal and treaty secured rights;

(c) The designation document expressly states that regulation of fishing is not authorized and that management of fishing and razor clam harvest will continue to be handled by state, tribal and federal managers other than OCNMS;

(d) Proposals to reduce consumptive use and establish true refugia were considered and expressly rejected at the time the OCNMS was established.

(e) Executive Order of May 26, 2000, which identifies the potential use of "No take Zones" *as appropriate*, expressly provides that the Order does not diminish, affect, or abrogate tribal authorities, Indian treaty rights, or the trust responsibilities of the United States toward Indian tribes.

As the foregoing discussion reflects, the issues raised by the current proposal were addressed when the Sanctuary was established and the resolution of those issues is reflected in the Sanctuary's boundaries, charter, and regulations. We sincerely hope that we will not have to revisit these issues in connection with each new Sanctuary program. To that end we ask that in the future you insure that Sanctuary staff take into account the limitations on the Sanctuary's authority before proposing restrictions on consumptive uses of coastal fish and wildlife resources and that the Sanctuary honor its obligation to engage in consultation with tribal governments before proposing such programs.

QIN staff have been and will continue to be involved in activities of Advisory Bodies and Working Groups. However, such participation neither represents tribal consultation nor relieves the OCNMS of the obligation to communicate directly with the government of the QIN. We expect all official contacts between the OCNMS and the QIN to be conducted on a government-to-government basis. For your reference, further communications regarding the OCNMS should be directed to Councilman Ed Johnstone. To minimize potentials for confusion and miscommunication in the future, we also request that you work with Councilman Johnstone to develop a formal memorandum of understanding to clarify roles, responsibilities, and protocols to govern our future relations.

The Quinault Nation is vitally interested in the protection and proper management of the shared resources that are found along the Pacific Coast. We welcome efforts by the OCNMS to provide scientific information that the Nation can utilize in managing areas and resources that are especially sensitive or significant from a biological perspective. However, the Quinault Nation will not permit intrusions on its treaty rights or sovereign authority.

Sincerely,

Pearl Capoeman-Baller

Pearl Capoeman-Baller
President

Quinault Indian Nation

POST OFFICE BOX 189 ◻ TAHOLAH, WASHINGTON 98587 ◻ TELEPHONE (360) 276-8211

June 10, 2001

Carol Bernthal, Superintendent
Olympic Coast National Marine Sanctuary
138 West 1st Street
Port Angeles, WA 98362

Re: Comments on Outreach Plan

Dear Carol,

We recently received materials from your office on the proposed Outreach Plan for the Sanctuary's effort to zone intertidal areas along the Washington coast. On behalf of the Quinault Indian Nation, we want to make it clear that:

1. The Quinault Nation does not agree with the proposal to rely upon intertidal zoning to manage the Olympic Coast National Marine Sanctuary (OCNMS).

2. The Quinault Nation objects to the Sanctuary's attempt to impose zoning or any other restrictions on areas that are outside the jurisdictional authority (geographic boundaries, charter, and regulations) of the OCNMS.

3. The Quinault Nation objects to any attempt to impose zoning or other restrictions on areas within the jurisdiction of the OCNMS without first completing government to government consultation with the Nation.

Quinault will not accept further attempts by the OCNMS or any of its bodies to intrude upon our treaty rights or sovereign authority. We repeat our request to work with Councilman Ed Johnstone to develop a formal memorandum of understanding to clarify roles, responsibilities, and protocols to govern our future relations.

Review of the draft Outreach Plan and the Power Point presentation underscores our concerns with the direction of the OCNMS staff, the Marine Conservation Working Group (MCWG) and Sanctuary Advisory Council (SAC). There is a fundamental inconsistency between the vision statements enunciated in these materials. More fundamentally, the principal objective of these materials does not appear to be directed at

the purpose of protecting the unique resources of the OCNMS, but rather at justifying the establishment and perpetuation of bureaucracy for managing the OCNMS and expanding the mandate of the OCNMS beyond its intent. Specific comments on the proposed Outreach Plan are attached for your reference.

Sincerely,

Pearl Capoeman-Baller
President Quinault Indian Nation

Cc. Ed Johnstone

OLYMPIC PARK ASSOCIATES
168 Lost Mountain Lane, Sequim, Washington 98382-9292
mcmorgan@olypen.com pollytdyer@juno.com

Ms. Marcy Golde, Advisory Committee
Olympic Coast National Marine Sanctuary
Marcy@Golde.org

Re: Summary of Preliminary Intertidal Reserve Site Recommendations
Within Olympic National Park
By the Marine Conservation Working Group

Dear Ms. Golde:

Thank you for bringing to the attention of Olympic Park Associates the Intertidal Reserve Sites being considered and proposed by the Sanctuary's Marine Conservation Working Group for the coastal area of Olympic National Park.

Our organization is most interested in this. We applaud the studies undertaken and, in general, support the recommendations outlined in the subject document.

A number of the Board of Trustees and members of Olympic Park Associates are personally familiar with the coastal area of Olympic National Park and the intertidal zone, also concurrently within the jurisdiction of the Olympic Coast National Marine Sanctuary.

We are cognizant of Tribal Treaty Rights related to natural resources for subsistence. From our past associations with and from the historical information regarding coastal tribes, we know it has been and is their conservation practice to assure these resources continue to be viable and not depleted.

We concur that it is essential for non-tribal visitors be constrained in collection of sea life and to be further educated about the necessity for restraints on taking and removal of intertidal marine resources.
Olympic Park Associates would appreciate, if possible, an opportunity, should a member of our Board of Trustees be available to review the actual recommendations. These, of course, are probably more detailed than in the summary outline furnished by e-mail.

We believe the personnel with the Olympic Coast National Marine Sanctuary may be interested in the background of the long association Olympic Park Associates has had with the coastal area of Olympic National Park. No doubt, this may appear in the historical records compiled by the OCNMS. Nevertheless – a brief review.

Olympic Park Associates was incorporated in January 1948 for protection of the "wilderness integrity" of Olympic National Park. The initial impetus was to protect the primeval forests of the western area of Olympic National Park, when then pending Congressional legislation proposed to eliminate these forests and open them to timber removal.

In 1953 the Ocean (coastal) Strip was added to Olympic National Park by Executive Order of President Harry Truman. Prior to the close of President Truman's term of office, Irving M.Clark, Sr., and John Osseward, officers of Olympic Park Associates, took the initiative to bring to the President's attention the need for the area to be formally added to ONP.

Following the 1938 Act establishing Olympic National Park, a study for additions to ONP was conducted for the Secretary of Interior by Irving Brant. Brant recommended a coastal area become part of Olympic National Park. Subsequently, coastal lands were acquired by the federal government, from the Hoh River to the vicinity of Cape Alava, excluding the existing Tribal Reservations.

In 1958, Olympic Park Associates and The Wilderness Society organized a coastal hike led by Justice William O. Douglas, from Cape Alava to Rialto Beach, to publicize the need to keep the area from being violated by a proposed highway to be constructed as close to the beach as possible. This 1958 hike was the turning point in preventing such road. In 1964 Justice Douglas led a "reunion" hike from Hoh Head and out at Third Beach; again, to reiterate the coastal area of Olympic National Park should never suffer a highway built through its length along its wilderness coast.

Olympic Park Associates took the lead to add the Point of the Arches/Shi Shi Beach area to be included in the coastal area of Olympic National Park. This was successfully achieved in 1976 with successful legislation in Congress, with the cooperation and leadership of then-Governor Dan Evans.

In 1988 Congress added to Olympic National Park, adjacent to the coastal area, the intertidal area, wildlife refuges, offshore islands and rocks, and Destruction Island. (The wildlife refuges continued under the joint jurisdiction of the U. S. Fish & Wildlife Service and the National Park Service.)

During the 1960's Olympic Park Associates Board of Trustee's member, Mrs. Neil Haig (Emily Haig), proposed the intertidal area be included in Olympic National Park, extending the Park from mean high tide to extreme low tide. Olympic Park Associates adopted a resolution to work towards achieving the required and subsequently successful Congressional legislation. Mrs. Haig didn't live to see the fulfillment of this most important step.

She would have been, were she still with us, as are all of members of Olympic Park Associates, most gratified when the Olympic Coast National Marine Sanctuary was established in 1994 --- not only to be working in concert with Olympic National Park for protection of the coastal and intertidal areas, but of the waters and benthic areas beyond.

Again – thank you for advising us of the recommendations for ongoing protection of the marine intertidal life within Olympic National Park and the Olympic Coast National Marine Sanctuary.

One further throught occurs, however. The 1988 legislation extending ONP's coastal area to extreme low tide, inadvertently omitted the intertidal areas of the offshore rocks, wildlife refuges, and Destruction Island. Is the Marine Conservation Working Group also including these areas in its subsequent studies and recommendations? Although not readily available to mainland-based visitors, these offshore areas are subject to visitation by people in small vessels.

Sincerely,

Polly Dyer, Member, Executive Committee
Olympic Park Associates

Cc: Board of Trustees, Olympic Park Associates
Supt. David Morris, Olympic National Park
Robert Freimark, Director, Northwest Region, The Wilderness Society
Heather Weiner, Northwest Regional Director, National Parks Conservation Assn.

Memo 10/21/02

To:	Marine Conservation Working Group
From:	Doug Fricke, Geoff Grillo
	Coalition of Coastal Fisheries
	Participating Marine Conservation Working Group Members
Subject:	Non Endorsement of Proposed No Harvest Zonning

In reviewing the National Marine Sanctuary authorities, "…the use of marine zoning as a management measure as necessary and where appropriate to support conservation objectives." There is no explanation that there is a conservation problem. To the contrary, the sites are noted for their unspoiled condition. It is our understanding that the National Park currently has authority to designate harvest allowances. Under present management, the areas have remained in pristine status. Some would suggest that with the increase interest in outdoor recreational activities, we should find ways to increase access and harvest opportunities rather than denying opportunities.

If in fact a harvestable (economically valuable) resource is identified in the designated areas, it seems that if Tribal persons can harvest in the designated areas, it will completely nullify the purpose of the designation. I assume that all of the designated areas are in "Historic Tribal Usual and Accustom Areas".

The discussion paper glossed over the issue of unequal access to harvestable resources in the Sanctuary area. We fully accept the unique Tribal rights as they have caused the reallocation of valuable resource harvest opportunities away from many families in the coastal communities that had been dependent on those harvest opportunities for survival.

Our main concern is not the no harvest zoning in the inter tidal areas as there is very little economic dependence on the designated areas. However, let the record show that this must not be a precedent for any future zoning that may occur in the marine waters. The harvest in the marine waters is currently managed by WDFW and NMFS. The Tribal rights are protected by carefully and diligent management. To set up harvest reserves for the sake of conservation or research that allowed tribal harvest would be totally unacceptable.

The efforts in analyzing the potential benefits of zoning areas has been very valuable and a valuable quantity of base line scientific information has been determined. We suggest this work is documented and when a conservation threat is identified in the future, we will have the tools in place to set up zoning that all citizens will have to respect.

PORT of GRAYS HARBOR
On Washington's Pacific Coast

November 26, 2002

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111 S. Wooding St.
PO Box 660
Aberdeen, WA 98520

360/533-9528
Fax 360/533-9505

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Westport Marina
PO Box 1601
Westport, WA 98595

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Commissioners:
Jack Thompson
Isabelle Lamb
Chuck Caldwell

Executive Director:
Gary G. Nelson

Mr. Bob Bohlman
Executive Director
Marine Exchange of Puget Sound
100 W. Harrison
Seattle, WA 98119

Dear Mr. Bohlman:

It us our understanding that it is the desire of the Olympic Coast National Marine Sanctuary (OCNMS) to assist the Olympic National Park to determine inter-tidal reserves along the co-managed tidal areas.

The Port of Grays Harbor believes that the use of 'inter-tidal' reserves, defined as no-harvest zones, as a zone type is unnecessary and inappropriate at this time. There doesn't appear to be sufficient evidence to justify these precautionary measures. It appears that the current management controls that are in place have been effective in keeping the areas pristine. In addition, we believe this measure to be outside of the original mandate of the Sanctuary Advisory Council.

Thank you for considering our position.

Sincerely,

PORT OF GRAYS HARBOR

Gary Nelson
Executive Director

cc: Carol Bernthal, NOAA's Olympic Coast National Marine Sanctuary
Liam Antrim, NOAA's Olympic Coast National Marine Sanctuary
Port of Grays Harbor Commissioners
Westport Marina Manager

Memo 12 - 11 - 02

To: Sanctuary Advisory Council / Marine Conservation Working Group
From: Geoff Grillo, Doug Fricke
Coalition of Coastal Fisheries
Participating Marine Conservation Working Group Members
Subject: Updated Position on Proposed Intertidal Reserves within OCNMS

We understand the desire of the Olympic Coast National Marine Sanctuary (OCNMS) for precautionary purposes to assist the Olympic National Park in determining intertidal reserves along the co-managed tidal areas. Because we question if the goals will be achieved with the proposed allowed uses, because of the precedent that may be set for off shore reserves and because the scientific purpose is undermined by the lack of tribal acknowledgment, we have not found any of our constituents supportive of the present proposals. Neither Geoff or Doug will be able to attend the 11-18-02 meeting and submit the following statement for consideration.

The Marine Conservation Working Group (MCWG) has spent considerable time and energy discussing the possible use of zoning as a tool to protect intertidal resources in the OCNMS. It is the position of the Fishing community that the use of "intertidal reserves" (defined as no-harvest or no-extractive use but allowing hiking, camping, campfires and surfing) as a zone type is currently unnecessary and inappropriate to protect the intertidal resources.

Reasons:

- The layers of government that currently manage the entire intertidal length of the OCNMS are considerable. National Park Lands, Tribal Lands, State Lands, and USF&W Refuses Lands compose the bulk of managed intertidal lands within the OCNMS. The current intertidal reserve discussion has focused on National Park lands within the OCNMS. We believe that the National Park can and should use its management authority to protect its intertidal property from real threats that exist from trampling, beachcombing, and poaching through its current enforcement authority or by restricting access. A proactive approach to future threats can be addressed with proper signage and education of those that use the intertidal areas explaining the uniqueness of the intertidal communities. The National Park representatives explained that they have success getting Park visitors to cooperate with protecting designated areas.
- Historic Tribal Usual & Accustomed Areas allow tribal harvest in these proposed reserves which would undermine the purpose and intent of such reserves.
- The precedent of no-take/no-harvest zoning by the Sanctuary Authority would not be consistent with the original Marine Sanctuary Authority of protecting traditional fishing rights and opportunities within the OCNMS. Traditional fisheries include tribal and non-tribal fisheries for both commercial and recreational purposes.

An option that may work to further the discussion would be:

- Have the Olympic National Park designate voluntary intertidal reserves for now until a time when all citizens would be in support of mandatory reserves. This would be a "Precautionary Approach" to identify areas that the scientist have deemed appropriate for additional protection. An opportunity to educate people to the benefits of careful use of the resources would naturally exist with these voluntary intertidal reserves. This would act to conserve intertidal biodiversity, sustain natural intertidal populations and provide opportunities to foster stewardship in the OCNMS.

IN REPLY REFER TO:

MAKAH TRIBAL COUNCIL
P.O. BOX 115 • NEAH BAY, WA 98357 • 360-645-2201

The Honorable Donald Evans
Secretary of Commerce

July 14, 2003

Dear Mr. Secretary:

Billy Frank Jr., recently presented to you the Northwest Indian Fisheries Commission's Tribal Policy Statement on Marine Protected Areas, Marine Reserves, Marine Sanctuaries, and Fishery Conservation Zones. As Mr. Frank noted in his transmittal letter, each tribal government is a sovereign entity, which may choose to develop its own statement regarding marine resource initiatives. Mr. Frank pointed out that the Commission's statement should be read as supporting these tribal specific statements, as it is appropriate that each tribe represent its unique geographic, social, economic, and legal interests.

The Makah Tribe has developed our own statement regarding Marine Protected Areas, which we enclose with this letter. The Reservation, located on the northwest corner of the Olympic Peninsula, borders both the Pacific Ocean and the Strait of Juan de Fuca in Washington State.

Because of our unique geographic location, and our reliance on marine resources harvested from the Pacific Ocean and the Strait of Juan de Fuca, our tribe has unique concerns regarding the possible establishment of Marine Protected Areas. We have attempted to articulate those concerns clearly and concisely in the enclosed statement. The Makah Tribe joins Mr. Frank in urging you to understand where we stand with this issue, and we share his belief that government-to-government dialog is essential to preserve marine resources while at the same time upholding Indian treaty rights and fulfilling the federal trust responsibility to Indian Tribes.

We would appreciate the opportunity to discuss our position with you and your agencies, and hope to hear from you about how to begin this effort.

Sincerely,

MAKAH TRIBAL COUNCIL

Nathan Tyler, Tribal Chairman

Cc: Washington State Congressional Delegation
Conrad C. Lautenbacher, Jr., NOAA
William Hogath, Ph. D., NOAAF
Richard W. Spinrad, Ph. D., NOS
Daniel Basta, Director, NMSP
Aureen Martin, AS-IA, DOI
Craig Manson, AS-FWP, DOI
Stan Speaks, BIA Regional Director
Bill Laitner, Superintendent Olympic National Park
Fran Mainella, Director, National Park Service
Carol Bernthal, Olympic Marine Sanctuary
Northwest Straits Commission
Governor Gary Locke
Puget Sound Action Team
Washington Department of Natural Resources
Washington Department of Ecology
Washington Department of Fish and Wildlife
Washington Fish and Wildlife Commission
Northwest Indian Fisheries Commission

STATEMENT OF THE MAKAH INDIAN TRIBE REGARDING MARINE PROTECTED AREAS

July 2003

In recent years, various individuals, organizations and government agencies have proposed the establishment of marine protected areas (MPAs). Already, MPAs have been established off the coasts of the United States and elsewhere. In 2000, President Clinton signed an Executive Order to "strengthen and expand the Nation's system of marine protected areas."

In his Executive Order, President Clinton defined an MPA as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." The MPA Center in the Department of Commerce states on its website that there "are many different types of MPAs in the United States," including "national marine sanctuaries, fishery management zones, national seashores, national parks, national monuments, critical habitats, national wildlife refuges, national estuarine research reserves, state conservation areas, state reserves, and many others."

However, despite these definitions, MPAs are typically understood as areas in which harvests of marine resources are prohibited. Ostensibly designed to conserve and enhance over-fished marine resources, MPA proposals can often mask an extreme preservationist agenda, which seeks to prohibit harvests regardless of their sustainability, the actual condition of affected marine resources, or alternative means to conserve and enhance such resources. Moreover, proposals for MPA "no-take zones" often reflect a "one-size-fits-all" approach to marine management, which fails to consider the unique attributes of particular areas, resources and fishing communities.

The possible establishment of MPAs off the northwest coast of Washington is very threatening to the Makah Tribe. The Makah Tribe depends on treaty secured fishing rights in marine waters to sustain culture and economics. Because the Tribe's rights are geographically restricted to our usual and accustomed fishing grounds at treaty times, "no-take" MPAs could deprive the Tribe of the most important part of our livelihood and way of life.

Some MPA proponents suggest that harvest restrictions would not apply to Indian treaty harvests. However, the Makah Tribe's experience with the Olympic Coast National Marine Sanctuary is that exemptions for treaty or other harvests put harvesters in the untenable position of harvesting resources from a sanctuary. Despite continuing rights to engage in harvesting activities, the existence of the Sanctuary is used to attack and limit such rights. The Makah Tribe fears that the establishment of MPAs within our usual and accustomed fishing grounds would be used in the same manner.

For these reasons, the Makah Tribe generally opposes the establishment of MPAs. As President Clinton stated in his Executive Order, the pursuit of MPAs "does not diminish, affect, or abrogate Indian treaty rights or United States trust responsibilities to Indian tribes."

Before a "no-take" MPA is established in tribal usual and accustomed fishing grounds, there must be: (1) compelling scientific evidence that particular resources are in need of conservation and rebuilding; (2) scientific analyses of stock structure and distribution to support the location of the MPA; (3) a rigorous examination of alternative means to conserve and enhance such resources to rebuild marine stocks (including fisheries enhancement programs used successfully in Japan and elsewhere, more conventional fisheries management measures, and special management areas in which measures are tailored to the particular area, resources and communities affected); and (4) a clear demonstration that establishment of an MPA within tribal usual and accustomed grounds is a necessary last resort to conserve and enhance the resources.

Based on the information currently available to the Makah Tribe there is no basis for the establishment of "no-take" MPAs in the Makah Tribe's usual and accustomed fishing grounds. Rather, the development of enhancement programs and special management measures tailored to these areas can conserve and enhance marine resources while permitting sustainable harvests and the continued exercise of the Makah Tribe's treaty rights.

In all events, the Makah Tribe must be a full partner in the consideration and development of any measures, including any MPA proposals that might affect the resources or harvests in tribal usual and accustomed fishing grounds. Because of our treaty rights and the federal trust responsibility to Indian tribes, and as required by Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments, the Makah Tribe must be consulted and invited to participate in scientific analysis and formulation and evaluation of alternatives throughout the development and consideration of such measures. In addition, funding sources must be identified for tribal scientific research and analysis, to enable the Makah Tribe to participate meaningfully in such processes.

MAKAH INDIAN TRIBE

Nathan Tyler, Tribal Chairman

Quileute Natural Resources
QUILEUTE INDIAN TRIBE

234 Front Street • Post Office Box 187
LaPush, Washington 98350
Phone: (360) 374-5695 • Fax: (360) 374-9250

November 20, 2003

Carol Bernthal, Superintendent
Olympic Coast National Marine Sanctuary
115 E. Railroad Ave., Suite 301
Port Angeles, WA 98362

Re: October 2003 Draft Recommendations of Marine Conservation Work Group

The Quileute Tribe is replying to you, government to government, regarding the subject draft, and has made comments directly on that draft. The draft with our comments is attached. For the benefit of those with limited time, we are covering our main issues in bullets in this cover letter. They are all of such importance, that they cannot be ranked.

- First, the MPA proposed is strictly a no-take zone, not a managed area. No option or variation of htat was ever considered.
- Although the MCWG was formed under a consensus banner and in fact, the document itself claims it is the result of consensus, in fact, it was not done by consensus, and your agency has now admitted this in writing by letter of November 7, 2003. Certainly the draft has to be corrected everywhere you state "consensus. We also see this change in process as a betrayal of the original premise.

- Through the draft, concessions are made to tribal treaty rights, but the document only acknowledges them to be "ceremonial and subsistence" (C&S) collecting of food. The overall effect paints a picture of the tribes as primitives. As you must know from your own experience with tribal employment, tribal treaty rights to the fishery extend to all species, and include not only C&S, but also, the right to commercial fishing, whether or not exercised at the moment.

  Further, the rights include management of the fisheries, with all that entails—functioning as co-managers of the resource *with* the state and federal co-managers participating in the federal and state governments' planning and regulatory meetings on harvest, species management, and habitat; engaging in biological surveys, and conducting research or assessments; and making our regulations and ordinances. In fact, U.S. v Washington mandates management on the part of the tribes.

If you are developing a document that creates limits but recognizes the tribal exception, you must recognize the *fullness* of the tribal exception and describe all components overtly. It would also behoove the OCNMS to have public training, so there is not a backlash on that exception. However, since we don't anticipate public training occurring in the near future, it is all the more critical to describe the tribal rights fully in this document.

- While the document goes into State of Washington biotoxin harmful algal bloom work, there is no mention of the fact that the Quileute Tribe has monitored this coast for some 10 years now. ORHAB over the past several years has extended the tribal program on this coast. There is virtually no discussion of the HAB work by any of the tribes—again painting the tribes as backward.

- Inadequate research was done to demonstrate the need for proposed MPA sites. *NOAA's own criteria are not being followed.* (See next bullet for criteria guidance.) The main reason offered for working on intertidal zones was that the coastline has been thoroughly mapped. This is not grounds for setting up conservation zones. There are more pressing needs within the Sanctuary boundaries, like deterioration of the benthic area because of dumping bycatch or dragging of gear along the bottom, but the Sanctuary ignores this, and begins zoning an area based on quality of mapping, not on biological grounds and demonstrated need. Further, it selects sites or exempts them based not on pressures that create stress, but on other factors (politics)? Highly pressured Kalaloch Beach gets no protection, while the proposal plans to close portions of Second Beach, for reasons of bird protection even when adjacent Quillayute Needles USFWS Reserve accomplishes that goal. The selections are neither adequately justified, nor based on science. We are concerned about some ancillary reasons given for creating MPAs, such as a feared run on gooseneck barnacles if Seattle publishes an obscure recipe that uses them. This kind of action (creation of MPAs) requires solid bases for denial of access of public lands, not prospective panic. The zoning bandwagon may be appropriate for other Sanctuaries more affected by population pressures, but the need for it in this particular Sanctuary must be demonstrated, first.

- So what factors/issues should be evaluated to select areas for MPAs?
    1) structure of marine communities (abundance, age of structure, species diversity, spatial distribution)
    2) Habitat maintenance or recovery
    3) Indicators of water quality or environmental degradation
    4) Socioeconomic attributes and impacts
    5) Biological location of marine larval source and sinks
    6) Nutrient flow.

  These protocols, which were established by the NOAA Coast Services Center in March 2002, "Marine Protected Areas Needs Assessment Final Report" have been ignored, with respect to involving and respecting tribes and fishermen (see pp. 3, 4, 37, 51-56, 75-78 of that document, available at http://www.csc.noaa.gov/bins/pubs.html and then select Publications button). *This is NOAA's own document and it is not being followed by NOAA.*

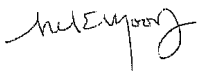
- There has been little effort to establish government-to-government discussions with the tribes; instead, OCNMS has put most of its effort into developing this document with the

players who chose to endorse it. You need to develop a process in which the tribes are fully engaged and not lumped with local governments and environmental groups.

- The draft is difficult to read, because of its length and the selected font (Gill Sans MT Condensed). This strange font selection for a first draft makes it very difficult to review closely—*not conducive to discussion and comment.* From a content standpoint, we also note that this draft is inconsistent as to detail or lack thereof.

Please refer to the returned draft with our comments for specific instances where the above concerns are raised, with suggestions for improvements. We know you are taking this document to the Advisory Committee for approval—another committee that is not designed as government-to-government but rather, as an aggregate of interested parties with no co-management role, except for the tribes. We trust that the appropriate negotiations and meetings with tribes will take place and that OCNMS will not take action on this draft until they have and until tribal needs and roles have been fully recognized.

Sincerely,



Mel Moon, Director,
Quileute Natural Reources

Copies to:
NOAA: William Hogarth, Jamison Hawkins, Daniel Basta
BIA: Stan Speaks, Portland Area Office
Congress: Patty Murray, Maria Cantwell, Norm Dicks
Tribes: Quinault, Makah,and Hoh Fisheries: Ed Johnstone, Rod Thysell, Russ Svec

APPENDIX B

INTERTIDAL RESERVE ZONE

Definition - *an intertidal area closed to all collection of living and non-living things and other extractive human uses.*

Background - Under the National Park Service (NPS) Organic Act of 1916 (16 U.S.C. 1, 2, 3, and 4, as reaffirmed and amended in 1970 and 1978), the NPS is dedicated to conserving unimpaired the natural and historical resources and wildlife of areas under its jurisdiction for the enjoyment, education, and inspiration of this and future generations. The coastal strip of Olympic National Park (ONP) is designated as wilderness under the Wilderness Act (PL 88-577), with limited exceptions (e.g. Kalaloch area) and managed to preserve natural conditions. The Olympic Coast National Marine Sanctuary shares jurisdiction of intertidal areas with ONP. Sanctuary regulations were developed to protect and manage the conservation, ecological, historical, research, and other resources and qualities of the area but do not address fishing and harvest of food. Current ONP regulations allow harvest of living organisms from intertidal areas during winter months when risk of shellfish poisoning is low (Figure 3 in report). Current levels of harvest are poorly documented but are generally assumed to be low, estimated at about 3% of visitors (excluding razor clam diggers) based on ONP ranger observations and visitor surveys[8,9]. Considerations that lend support for limitations on intertidal harvest include the following.

- Visitor day use is concentrated at limited areas of the shore where access is easy, where vehicle access is near the shore.
- Harvest techniques for favored organisms on rocky substrate, such as scraping rocks for mussels or gooseneck barnacles, can be destructive if not done carefully. Bare patches are often created, and recovery of the community is slow.
- In the future, increasing numbers of visitors will lead to a gradual increase in harvest activity and impacts, if interest levels and opportunity remain the same.
- Vogue harvest interest, or a sudden popularity of eating a wild caught food, could quickly cause widespread degradation of intertidal areas, particularly rocky sites where harvest practices can have significant effects on the communities present.
- Depletion of intertidal resources in the Puget Sound region is sending harvesters further afield from urban population centers, at the same time as the mobility and numbers of ethnic Asian and Southeastern Pacific peoples are increasing in the region. With its rich intertidal resources, the outer Olympic Coast is an attractive destination for harvesters.
- The remote nature and difficult access to many portions of the Park's shore limit enforcement presence, while the geographical extent of shore makes widespread

[8] Erickson, A. and J.G. Wullschleger. 1998. A preliminary assessment of harvest on the Olympic Coast. Draft Report to Olympic National Park, Port Angeles, Washington.
[9] Kendrick, G.A. and B.B. Moorhead. 1987. Monitoring recreational impact on intertidal biotic communities, Pacific Coast Area, Olympic National Park. 1986 Progress Report for Olympic National Park, Port Angeles, Washington

monitoring of harvest impacts difficult. Management for conservation with limited areas having harvest prohibitions is less complicated and less labor intensive than increased enforcement and monitoring efforts over the entire coast to detect negative impacts of harvest.

- Preservation of natural resources and an undisturbed aesthetic that includes intact communities is consistent with the general public's perception of national parks and wilderness areas.

Purpose

1. to provide limited areas where the integrity of biological communities has minimal influence from harvest pressure, for values inherent in the communities and distinct from human use
2. to provide limited areas of intact biological communities where research can be conducted to evaluate natural processes in the absence of harvest, areas to serve as controls for study of community dynamics at harvested areas
3. to provide protected areas that can serve as source sites for propagation of intertidal organisms
4. to encourage a public conservation ethic by establishing protected zones where the value of resource protection can observed and appreciated
5. to provide areas where the accumulation of shells, sticks, rocks, and other natural materials is representative of a state undisturbed by the actions of transient visitors

Impacts

- Harvest – collection of living organisms can impact both the biological communities present and the physical substrate at a site.
- Souvenir collection – removal of natural materials changes the aesthetic of a wild area and could influence the ecology in ways we do not yet comprehend. A handful of material collected by a thousand visitors amounts to a major modification to an area.
- Beach fires – burning of wood from intertidal and supertidal areas.

Management Recommendations

- Harvest – prohibit collection of all living organisms in an intertidal reserve
- Souvenir collection – prohibit the removal of rocks, sticks, shells and other beach materials
- Beach fires – prohibit beach fires in intertidal reserves. This is consistent with a prohibition on removal of natural souvenir materials.
- Other management actions should be considered as necessary to address emerging issues, such as ambiguity of zone boundaries, improved interpretive signs, increased enforcement presence.

Recommendations for allowable and prohibited activities are summarized in the matrix of allowable activities (Table 2 in report). Collection of souvenir materials (e.g., shells, sticks, and rocks) from intertidal reserves was debated. Although no significant population and habitat impacts were identified associated with souvenir collection, cumulative ecological impacts from numerous visitors and aesthetic impacts are possible. Under existing Park rules, campfires are

allowed in intertidal areas but not within 100 feet of drift logs. The group felt that rules for wood removal for campfires and souvenir collection should be consistent, and they recommend that both campfires and souvenir collection should be prohibited in intertidal reserves. Surf cast fishing from shore targets species managed by WDFW and should be allowed from intertidal reserves. Organism collection for bait is currently prohibited from Park shores and should remain so. Large groups visiting intertidal reserves for day use should be required to register with Olympic National Park to document visitor use and enhance opportunity for outreach on conservation and management issues.

Locations

A series of seven intertidal reserve sites were selected through evaluation of a variety of attributes including habitat type, analysis of sensitivity to harvest impacts, and accessibility of the shore to visitation. The proposed intertidal reserve sites are Point of Arches, Cape Alava to Sand Point, 2-Bit Point, Cape Johnson/Hole-in-the-Wall, Teahwhit Head, Taylor Point, and Goodman Creek to Hoh River (Figures 8 and 9). Summary sheets for each potential intertidal reserve are provided at the end of this appendix.

Analysis of Proposed Intertidal Reserve Sites

As summarized in Table B.1, the proposed set of intertidal reserves cover a cumulative distance of about 38 km (24 miles) or 37% of the mainland shore of ONP. Each of the major intertidal habitat types is represented in these recommendations, but habitats more susceptible to harvest damage (rock ramp, rock cliff, and mixed gravel) are represented in higher percentages than sand habitat. Because protection of different habitat types promotes protection of different organisms, this set of intertidal reserves should contribute to protection of the coast's biological diversity. Also, these reserves are distributed widely across the ONP shore and consist of both small, distinct sites and longer stretches with diverse habitats. This set of intertidal reserves allow for low-impact recreation to occur throughout the mainland shoreline. Establishment of these intertidal reserves could foster long-term monitoring to influence management, research to gain a better understanding of ecological processes, and public outreach and education concerning stewardship of public lands and Native American treaty rights. Opportunity for the non-tribal public to collect seafood remains on about 2/3rds of the ONP shore at a variety of habitat types.

Table B.1. Analysis of Habitat Type in Intertidal Reserve Recommendations

Segment				Portion in Intertidal Reserve Zone				
Point of Arches to Cape Alava								
habitat	meters	count	% of cell	habitat	meters	count	% of cell	% of habitat type
rock ramp	2,318	2	16%	rock ramp	2,318	2	16%	100%
rock cliff	77	1	1%	rock cliff	77	1	1%	100%
mixed gravel	7,228	4	48%	mixed gravel	2,616	3	18%	36%
sand	4,739	3	32%	sand	-	0	0%	0%
estuary	572	1	4%	estuary	-	0	0%	0%
total	14,934	11	100%	total	5,011		34%	
Cape Alave to Quillayute River								
habitat	meters	count	% of cell	habitat	meters	count	% of cell	% of habitat type
rock ramp	-	0	0%	rock ramp	-	0	0%	
rock cliff	-	0	0%	rock cliff	-	0	0%	
mixed gravel	21,690	10	60%	mixed gravel	11,551	4	32%	53%
sand	14,162	7	39%	sand	3,251	1	9%	23%
estuary	210	1	1%	estuary	-	0	0%	0%
total	36,062	18	100%	total	14,803		41%	
Quillayute River to Hoh River								
habitat	meters	count	% of cell	habitat	meters	count	% of cell	% of habitat type
rock ramp	-	0	0%	rock ramp	-	0	0%	
rock cliff	3,950	3	12%	rock cliff	2,501	2	8%	63%
mixed gravel	7,472	6	22%	mixed gravel	6,266	5	19%	84%
sand	20,917	9	63%	sand	8,809	3	26%	42%
estuary	974	1	3%	estuary	974	1	3%	100%
total	33,313	19	100%	total	18,551		56%	
Hoh River to South Beach								
habitat	meters	count	% of cell	habitat	meters	count	% of cell	% of habitat type
rock ramp	-	1	0%	rock ramp	-	0	0%	0%
rock cliff	-	1	0%	rock cliff	-	0	0%	0%
mixed gravel	3,642	5	18%	mixed gravel	-	0	0%	0%
sand	15,662	9	78%	sand	-	0	0%	0%
estuary	801	2	4%	estuary	-	0	0%	0%
total	20,104	18	100%	total	-	0	0%	-
All of ONP Shoreline								
habitat	meters	count	% of total	habitat	meters	count		% of habitat type
rock ramp	2,318	2	2%	rock ramp	2,318	2		100%
rock cliff	4,027	4	4%	rock cliff	2,578	3		64%
mixed gravel	40,031	24	38%	mixed gravel	20,434	12		51%
sand	55,480	27	53%	sand	12,060	4		22%
estuary	2,558	4	2%	estuary	974	1		38%
total	104,413 meters			total	38,365 meters			
	64.8 miles				23.8 miles		37%	of ONP shore

Options for Implementation

Participants in the MCWG expressed a range of opinions about intertidal reserves in terms of feasibility of implementation and level of support. To accommodate this range of opinion, a variety of options for implementation were developed. Commercial fishing representatives suggested initial establishment of voluntary harvest restrictions until full acceptance by the community is gained. Key points raised on the merits of voluntary versus regulatory harvest restrictions were as follows.

1. Voluntary measures are more effective when dealing with a single, discrete user group and users that repeatedly return to an area. This does not necessarily represent the demographics of outer coast visitors.
2. Better compliance is likely achieved if voluntary measures address an easily understood issue, such as a depleted resource, rather than proactive management to prevent future impacts.
3. Voluntary compliance can be difficult to achieve, particularly with popular recreational resources (e.g., razor clams).
4. Public outreach and monitoring for compliance are necessary under all scenarios, perhaps more so with voluntary measures than with regulations.
5. Voluntary conservation measures are a good educational tool.
6. Numerous jurisdictions on the outer coast could contribute to effective compliance monitoring.
7. Compliance monitoring of voluntary reserves could require more staff resources (i.e., time and people) than regulatory actions.
8. A voluntary intertidal reserve recommendation might have higher likelihood of consensus with MCWG and better acceptance with the public than the regulatory approach.
9. Full acceptance by the community is not easily defined or measured.

Further discussions covered the following points. MCWG consensus for support of all intertidal reserve recommendations was not possible, but the group has identified sites of conservation significance on the shore. The MCWG could acknowledge this while deferring recommendations about harvest management or other issues to other authorities. Triggers that shift voluntary intertidal reserves to regulatory management could be based on either compliance/behavior or resource damage. This shift should be applied on a site-specific basis, rather than all intertidal reserves if triggered at one site. Initial indications of poor compliance should first promote enhanced outreach, then implementation of regulations. Monitoring for compliance could be labor intensive, and funding may not be readily available. Lack of funding for adequate monitoring could also trigger to shift from voluntary to regulatory intertidal reserves. Defining a trigger associated with resource damage will be more challenging than for compliance. Initial indications of damage could promote more intensive monitoring. Full compliance with either voluntary or regulatory reserves likely will never be achieved, except by implementing and enforcing access prohibitions.

To capture the range of opinion associated with proposed intertidal reserves, participants developed these options for implementation of intertidal reserves:

1. No intertidal reserves.
2. We have identified areas of special conservation significance for ongoing management decisions; no specific management recommendations are offered.
3. Voluntary intertidal reserves with emphasis on public outreach/education.

4. Voluntary intertidal reserves with emphasis on public outreach/education, and either compliance-based or resource damage trigger for evaluation of management options on a site-specific basis.
5. Regulatory establishment of intertidal reserves with initial emphasis on public outreach/education, rather than enforcement. Enforcement actions would be implemented after a suitable period.
6. Regulatory establishment of intertidal reserves with public notification and immediate implementation of enforcement actions.

The following levels of agreement were developed to express each member's position on each implementation option.

1. I do not agree with this option.
2. I may not be especially enthusiastic about it, but I can accept this option.
3. I think this is the best option available to us.
4. I am enthusiastic about this option

Table B.2. Level of support for implementation options for intertidal reserves

Implementation Option	Option 1: No intertidal reserves	Option 2: Areas of special conservation significance	Option 3: Voluntary intertidal reserves	Option 4: Voluntary reserves with trigger	Option 5: Intertidal reserves with outreach emphasis	Option 6: Intertidal reserves with immediate enforcement
WDFW	1	3	4	2	2	1
Quinault Nation	2	3	2	2	1	1
ONP	1	3	2	2	4	1
Conservation	1	3	2	2	4	1
USFWS	1	3	2	3	4	1
WSPRC	1	2	2	3	2	1
Commercial Fishing	2	3	2	1	1	1
Research	1	3	2	2	4	1
WDNR	1	2	3	2	1	1
No other participants provided their level of support to the MCWG coordinator.						

Analysis of Polling Results

- Consistently low levels of support were expressed for no intertidal reserves (option 1) or intertidal reserves with immediate enforcement (option 6).
- All group members were able to support recognition of areas of special conservation significance without specific management recommendations (option 2) and voluntary intertidal reserves with no trigger for regulatory implementation (option 3).
- Most group members felt the best option for implementation was recognizing special areas without making management recommendations (option 2).

- Several expressed enthusiastic support for either voluntary or regulatory intertidal reserves without strict enforcement (options 3 and 4).

Specific Comments

- Commercial fishing representatives could not support intertidal reserves of any kind that apply only to non-tribal persons, and therefore could not provide even unenthusiastic support for any option with potential for regulatory implementation (i.e., options 4, 5, and 6).
- Commercial fishing representatives were not convinced that extensive intertidal reserves were appropriate and suggested limiting intertidal reserves to 1 mile of shore or less, if intertidal reserves were to be implemented.
- The conservation representative emphasized that MCWG zoning options should not preclude implementation of more restrictive management if authorities deemed it necessary now or in the future.
- The Quileute Tribe emphasized that tribal biologists and other staff require access to intertidal reserves for resource management purposes, as well as tribal access for treaty harvests.
- The WDNR representative questioned Option 4 and was uncertain how compliance or resource damage would be measured. Without criteria to define a trigger for regulation, it was more difficult to support this option.
- Commercial fishing representatives pointed out that the goals of intertidal reserves could be accomplished by limiting access. If access were not easy, human use and associated disturbance to intertidal areas would be less.

APPENDIX C

WILDLIFE PROTECTION ZONE

Definition - *An intertidal area closed to all access, except by permit or for emergency response.*

Background – The Washington Islands National Wildlife Refuges (WINWR), comprised of the Copalis, Quillayute Needles, and Flattery Rocks National Wildlife Refuges, include more than 600 rocks, reefs, and islands designated as wilderness to be preserved in an undisturbed and natural condition with minimal human intrusion. These islands and reefs were originally designated refuge areas as critical nesting and breeding grounds for marine wildlife, and they continue to serve this essential function. Nesting seabirds and marine mammals hauled out on the shore are particularly vulnerable to human disturbance. Upland areas in the Refuge are closed to human access to protect the sensitive wildlife. The Washington Islands National Wildlife Refuges' regulations prohibit access to all offshore lands without permit, but this restriction applies only to lands above mean high water, the lower limit of refuge jurisdiction. A 200-yard access buffer around offshore lands is a recommended setback, not an enforceable regulation, that reduces access and minimizes human disturbance to critical nesting and breeding grounds for marine wildlife. Motorized and hand powered vessels can legally transit within 200 yards of these lands.

A goal identified in the Refuges' Draft Comprehensive Conservation Plan is to protect migratory birds and other wildlife and their associated habitats, with special emphasis on seabirds (USFWS 2001).[10] An associated objective is to promote an undisturbed, natural environment across the Refuges by prohibiting access on an ongoing basis. The islands and rocks in the Refuges provide habitat for over 72 percent of Washington State's nesting seabirds and host among the largest seabird colonies in the continental U.S. (Speich and Wahl 1989).[11] Some seabird species only breed on the outer Olympic Coast, likely due to a loss of nesting habitat elsewhere in Washington. Breeding seabirds in the WINWR include fork-tailed and Leach's storm-petrels, three species of cormorants, black oystercatchers, three species of gulls, common murres, pigeon guillemot, ancient murrelets, Cassin's and rhinoceros auklets, and tufted puffins. Bald eagles and peregrine falcon also nest on Refuge islands. Sea lions and seals regularly haul out at numerous locations on the islands and reefs.

Under the Endangered Species Act, four species that use the islands and reefs are listed as threatened or endangered (brown pelican, marbled murrelet, Steller sea lion, and bald eagle). An isolated population of the shrew-mole, the Destruction Island shrew, is found only on the island

[10] USFWS (United States Fish and Wildlife Service). 2001. Washington Islands National Wildlife Refuges Draft Comprehensive Conservation Plan and Environmental Assessment. Interim Draft, July 2001.

[11] Speich, S.M. and T.R. Wahl. 1989. Catalog of Washington Seabird Colonies. United States Fish and Wildlife Service, Mineral Management Service, Department of the Interior. Biological Report 88(6); OCS Study MMS 89-0054.

and is a Federally listed Species of Concern. At least six additional species of birds and mammals have status as endangered, sensitive, or candidate species under the Washington State Priority Habitats and Species Program (Brandt's cormorant, Cassin's auklet, common murre, peregrine falcon, tufted puffin, and sea otter).

Any human action that substantially disrupts the normal behavior of seals and sea lions is prohibited under the Marine Mammal Protection Act, with guidelines that restrict human activity within 100 yards of marine mammals, or swimmers and divers within 50 yards. The Endangered Species Act also protects listed species from disturbance. Federal regulations (36 CFR Part 2, Sec. 2.2) prohibit frightening or intentional disturbance of wildlife nesting, breeding or other activities in national parks.

Jurisdiction of intertidal areas of the Refuge islands is shared between the Olympic National Park (ONP) and Olympic Coast National Marine Sanctuary. The coastal strip of Olympic National Park is designated as wilderness (with limited exceptions, e.g. Kalaloch) and managed to preserve natural conditions. The National Park Service is dedicated to conserving unimpaired the natural and cultural resources and values for this and future generations. Current ONP management does not have specific regulation associated with offshore rocks, reefs, and islands. ONP regulations that apply to the coastal strip allow access to intertidal areas and seasonal harvest of living organisms but do not allow landing of motorized craft on the Park's shore. ONP regulations do not specifically prohibit disturbance to seabirds or access to intertidal areas adjacent to sea bird colonies or marine mammal haul out areas. Consequently, it is not against federal regulations for people to land hand powered vessels on the shore below mean high water, walk along the shore, have a campfire in the intertidal area, and collect intertidal organisms for consumption. Nevertheless, the islands are dangerous and unstable areas for human use and access.

Whereas many islands and reefs require a boat for access, some sea stacks and nearshore island are accessible by foot at low tide from the mainland (Table 1). Human presence in intertidal areas, particularly during breeding seasons for seabirds, can disturb nesting birds. Such disturbance not only increases energy demands for adult birds on nests, it also increases vulnerability of eggs and chicks to avian predators and heat loss. A study that compared areas where human access was prohibited with open areas demonstrated that the largest negative impact was found during the seabird breeding season, which coincided with the highest levels of human visitation.[12] Moreover, the presence of humans negatively affected birds year round. The authors concluded that effective protection of sensitive coastal bird assemblages requires restrictions on human access.

In addition to wildlife disturbance, human use of sea stacks and islands can cause physical damage that can be reduced through access restrictions. Humans climbing on the thin veneer of tenacious vegetation and soil of sea stacks can have negative impacts on plant communities and habitat, as well as collapse the fragile homes of seabirds that nest in burrows (e.g., storm petrels, rhinoceros auklets, tufted puffins, Cassin's auklets). A study of the effects of rock climbing on vegetation concluded that the activity has demonstrable and significant negative effects on all aspects of the vegetative community (i.e., density, percent cover, species richness, and species

[12] Cornelius, C., S.A. Navarrete, and P. A. Marquet. 2001. Effects of human activity on the structure of coastal marine bird assemblages in central Chile. Cons. Biol. 15(5): 1396-1404.

diversity).[13] This study recommend that conservation plans be modified to include specific policies regarding recreational rock climbing for lands with exposed cliffs, such as the sea stacks of the Park's coastal strip.

The value of island refugia was demonstrated in studies of harvest impacts on Chilean shores by Castilla and Bustamente (1989).[14] In their work, nearshore islands served as control sites for comparison with harvested and unharvested sites on the mainland shore. Sites with access restrictions, such as the islands off the Olympic Coast, will be valuable control sites particularly for long-term studies to monitor for incremental degradation of the mainland shore from cumulative effects of harvest, trampling, and wildlife disturbance. In studies of harvest impacts on shores of Puget Sound, both Carney and Kvitek (1991)[15] and Norris et al. (1999)[16] concluded that the most conclusive way to evaluate the impact of humans on intertidal species is use of manipulative field experiments in which people are excluded selected areas.

Purpose

1. to provide specific areas that are preserved in an undisturbed state with minimal human intrusion, for their intrinsic and scientific value at limited but appropriate sites
2. to protect critical nesting and breeding grounds for seabirds and haul out areas for marine mammals that are particularly susceptible to disturbances by humans on the shore
3. to provide a level of protection for intertidal areas equal to that of the islands' uninhabited terrestrial environment
4. to enhance public safety by restricting access to these dangerous and unstable environments

Impacts

- Disturbance – human presence affects the behavior of nesting seabirds and marine mammals.
- Erosion – human access to upland areas can quickly erode thin and fragile soils and vegetation on the island and collapse burrows of nesting birds.
- Trampling – physical disruption of substrate and attached organisms in intertidal areas can occur through human use.
- Harvest – collection of living organisms can impact both the biological communities present and the physical substrate at a site.

MCWG Discussion

Within the WINWR the intertidal is an area that currently receives little visitation, but it is not fully protected from negative impacts of visitor use. A number of islands have unique value because of the species or numbers of nesting birds present, but it would be difficult to select prioritized sites among the islands because most islands are important breeding grounds for one

[13] McMillan, M.A. and D.W. Larson. 2002. Effects of rock climbing on the vegetation of the Niagara Escarpment in southern Ontario, Canada. Cons. Biol. 16(2): 389-398.
[14] Castilla, J.C. and R.H. Bustamente. 1989. Human exclusion from rocky intertidal of Las Cruces, central Chile: effects on *Durvillaea antarctica* (Phaeophyta, Durvilleales). Mar. Ecol. Prog. Series 50: 203-214.
[15] Carney, D. and R.G. Kvitek. 1991. Assessment of nongame marine invertebrate harvest in Washington State. Final Report to Washington Department of Wildlife. 57 pp.
[16] Norris, J.G., D. Llewellin, A. Murphy, and D. Nolan. 1999. Recreational seaweed harvest near Fort Warden State Park 1996 to 1998. Prepared for Port Townsend Marine Science Center. 36 pp.

or more species. Seasonal regulations were not considered as practical or easily conveyed to the public as year-round regulations.

The question was raised about protection of the islands being adequate to suffice for sustaining biodiversity on the coast, which could eliminate the justification for mainland intertidal reserves. Little empirical data is available to characterize water currents and genetic exchange between islands and the mainland. Due to differences in physical dynamics and lack of some habitat types (i.e., sand), island shores would not likely serve as appropriate control sites for studies paired with mainland shore sites.

Islands and sea stacks accessible from the mainland shore at low tide that are used by seabirds and marine mammals were also considered (see Table D.1). The seal haul out sites near Yellow Banks, Teahwhit Head, Toleak Point, and Sand Point are difficult to access because of water (i.e., surge channels) or are a long hike across algae covered boulders, distant from the high intertidal area where most visitors use occurs, as well as being difficult to delineate or identify with signs. At extreme low tides, harbor seals would not use these sites because a deep water escape route is needed by the seals. At extreme low tides, shelf areas can have shallow water or dry land between the haul out sites and deep water. The seals normally leave before they are trapped and subject to terrestrial predation (Steve Jeffries, WDFW, personal communication). In fact, harbor seal surveys at haul out sites are not conducted at extreme low tides because they consistently have lower counts.

The only site identified in Table D.1 that was recommended as a wildlife protection zone was Crying Lady Rock, which lies off Second Beach (Figure D.1). This sea stack has nesting seabirds and also is susceptible to vegetation damage from rock climbing.

Table C.1. Islands and sea stacks accessible from the mainland shore during extreme low tides that host breeding seabirds or regular haul out groups of marine mammals

Site	Intertidal Segment	Species Present	*Comments*
Sand Point area	53-54	Harbor seal	Haul out sites east of White Rock and off Sand Point (100-500 seals)
Yellow Banks	56	Harbor seal	2 haul out sites (<200 seals)
Crying Lady Rock (Quillayute Needles)	74	Pelagic cormorant Double crested cormorant Brandt's cormorant Peregrine falcon*	Accessible at low tide (off Second Beach)
Teahwhit Head	75	Harbor seal	Haul out site on south side (<100 seals)
Toleak Point	81	Black oystercatcher Harbor seal Peregrine falcon*	Accessible at low tide 2 haul out sites (~100-500 seals)

* WA State endangered listing

Management Options

- Access to all marine offshore rocks, reefs, and islands within the Washington Islands National Wilderness Refuges, Olympic National Park, and Olympic Coast National Marine Sanctuary boundaries should be prohibited without a permit, except for emergency response.
- Access to Crying Lady Rock at Second Beach should be prohibited without a permit, except for emergency response.
- Access permits should be granted for scientific research. Inter-agency coordination is required for this permitting. Research that cannot reasonably be conducted at other sites should be favored.
- Other management actions as necessary (e.g., interpretive signs, increased enforcement presence) to address emerging issues such as technical rock climbing or new extreme sports

Locations

- All offshore rocks, reefs, and islands included in the boundaries of federal wildlife refuges that comprise the Washington Islands Wilderness, Olympic National Park, and Olympic National Marine Sanctuary, and Crying Lady Rock off Second Beach.
- Tatoosh Island is part of the Makah Tribal Reservation and James Island is part of the Quileute Tribal Reservation; these two islands are not part of the Washington Island Wilderness, are not under federal management, and are not included in these recommendations.

Options for Implementation

The group developed these options for implementation of wildlife protection zones:

1. No intertidal reserves.
2. We have identified areas of special conservation significance for ongoing management decisions; no specific management recommendations are offered.
3. Voluntary wildlife protection zones with emphasis on public outreach/education.
4. Voluntary wildlife protection zones with emphasis on public outreach/education, and either compliance-based or resource damage trigger for evaluation of management options on a site-specific basis.
5. Regulatory establishment of wildlife protection zones with initial emphasis on public outreach/education, rather than enforcement. Enforcement actions would be implemented after a suitable period.
6. Regulatory establishment of wildlife protection zones with public notification and immediate implementation of enforcement actions.

The following levels of agreement were developed to express each member's position on each implementation option.

1. I do not agree with this option.
2. I may not be especially enthusiastic about it, but I can accept this option.
3. I think this is the best option available to us.
4. I am enthusiastic about this option

Table C.2. Level of support for implementation options for wildlife protection zone

Implementation Option	Option 1: No wildlife protection zones	Option 2: Areas of special conservation significance	Option 3: Voluntary wildlife protection zones	Option 4: Voluntary wildlife protection zones with trigger	Option 5: Wildlife protection zones with outreach emphasis	Option 6: Wildlife protection zones with immediate enforcement
WDFW	1	2	2	3	4	1
Quinault Nation	1	2	2	3	1	1
ONP	1	1	1	1	4	1
Conservation	1	2	1	1	4	1
USFWS	1	2	1	1	4	1
WSPRC	1	2	2	3	3	1
Commercial Fishing	1	2	4	2	1	1
Research	1	1	1	1	4	1
WDNR	1	2	3	2	1	1
No other participants provided their level of support to the MCWG coordinator.						

Analysis of Polling Results

- All participants supported this zone type at some level; all participants rejected option 1 (no wildlife protection zone). This broad support is recognition of the unique wildlife value of the islands, both on the uplands and intertidal areas.
- All participants gave strong support for access restrictions on the islands, either as voluntary measure (options 3 and 4) or a regulatory measure with emphasis on public outreach rather than enforcement (option 5).
- ONP and research representatives gave enthusiastic support for wildlife protection zones and did not support at any level other options for implementation.
- Strong polarization is evident under option 5, where the majority of participants were enthusiastic about this option but the Quinault Tribe, commercial fishing, and WDNR representatives did not support this option.
- No participants supported implementation with immediate enforcement actions (option 6).

The following specific comments were provided by participants.

- The Quileute Tribe noted that tribal managers and biologists have access to such areas guaranteed by treaty rights.
- The Quileute Tribe questioned the need for including Crying Lady Rock in this zone. They noted that birds on Crying Lady Rock are high up from the beach and do not appear to be disturbed by human activity on the beach and questioned if adequate protection for seabirds was not provided by the offshore rocks and islands.
- The WDNR representative questioned Option 4 and was uncertain how compliance or resource damage would be measured. Without criteria to define a trigger for regulation, it was more difficult to support this option.

Figure C.1 Crying Lady Rock at high tide, Second Beach, Olympic National Park, south of LaPush, WA

APPENDIX D

HIGH USE ZONE

Definition - *an area that receives or is susceptible to physical disturbance as a result of high levels of visitation.*

Background - Examples from throughout the world demonstrate that easy access to intertidal areas in combination with habitat and species susceptible to disturbance typically results in trampling and inadvertent damage by humans. The coastal strip of the Olympic National Park (ONP) attracts large numbers of visitors, use that is concentrated during summer months. Due to the relatively remote nature of the ONP shore, a limited number of coastal sites offer easy access where visitors can reach the shore without an extended hike or equipment necessary to spend the night in the backcountry.

All visitors to ONP can contribute unintentionally to disturbance of intertidal habitats and organisms, both plants and animals. The most significant impacts, however, occur primarily at high use areas where the cumulative effect of numerous visitors degrades the shore. Some habitats, such as unvegetated sand beaches, can withstand high levels of visitation without demonstrable impacts to habitats or biological communities present. Communities associated with rocky substrate and boulders, however, are more vulnerable to physical disturbance by trampling that results from many visitors. At any site, handling by curious visitors can harm intertidal life.

In addition to unsupervised day use and backcountry visitation, organized interpretive and educational programs bring large numbers of visitors to intertidal areas. Organized group activities, such as routine ONP interpretive programs, are an identifiable and discrete activity with potential to degrade intertidal areas, yet they are an issue that can be addressed through management actions. Currently, ONP interpretive staff lead organized group walks daily on a seasonal basis (spring through fall) at Mora/Hole-in-the-Wall, Beach Trail 4/Starfish Point, and Kalaloch. Other organizations, such as schools and colleges, bring large groups to the shore for educational visits.

Although group visits focus foot traffic on limited areas, interpretive programs are also an opportunity for educating the public about a variety of topics including the coastal ecosystem, a conservation stewardship ethic, the potential for visitors to damage intertidal habitats and biological communities, and the value of management practices for conservation. Moreover, benefits of an improved stewardship ethic extend to all portions of ONP and beyond, and potentially to many aspects of visitors' daily lives.

Current ONP management does not limit the number of people who can accompany an ONP ranger on interpretive walks. In summer months, a group size of 30-40 people is typical but as many as 90 people accompanied a single ranger on intertidal programs. Currently, there is no

requirement for organized groups of any size to contact the Park for day use activities. Registration and permitting is required only for backcountry use (overnight camping). Access restrictions to control the number of visitors on the Park shore have been implemented only for backcountry use of the shore between Cape Alava and Sand Point. ONP has an electronic database covering from 1988 to the present with data for backcountry users who register for overnight trips to the coast. Day use levels, however, are not well documented and quantified by ONP.

High use areas on the ONP shore include Cape Alava to Sand Point, Rialto Beach to Hole-in-the-Wall, Second Beach, Third Beach, and the coast stretch between Ruby Beach and South Beach that includes Kalaloch, where Highway 101 follows the coast closely. Improvements to trail access to Shi Shi Beach via the Makah Reservation may significantly increase visitation levels to this popular area also.

Purpose

1. to minimize non-harvest human disturbance and impacts at high use sites
2. to encourage education and interpretive activities at appropriate sites
3. to focus trampling impacts at particular sites
4. to instill a stewardship ethic in visitors through interpretive opportunities

Impacts

- Trampling – physical disruption of substrate and attached organisms in intertidal areas.
- Organism handling – disturbance by manipulation of living organisms for observation.

Management Options

Creative suggestions for management options were encouraged and the following suggested.

- ONP should recognize that large groups can have an impact, and that they be managed accordingly.
- Control access at many levels, for example through trailhead and parking area design and site selection, directing large groups to use focus activities high use zones, and establishment of fixed trails in sensitive habitats
- With consideration of the wilderness designation for coastal areas, established walkways should be considered at sites most impacted by trampling.
- Enhanced interpretative efforts at contact stations should focus on conservation and minimization of visitor impacts.
- Signs and handouts indicating appropriate codes of conduct should be developed and available to the public.
- Face-to-face contact is the most effective interpretive technique, but signs are also useful tools. Improving signs at coastal trailheads and making this a priority in the maintenance cycle should be encouraged.
- Recognizing that face-to-face interpretation is important for effective interpretation as well as compliance with regulations, and that there is some optimum group size for effective interpretive walks, interpretive opportunities should be increased during peak demand periods. For example, additional interpretive staff should be available for summer weekends if data indicate average interpretive group size greater than optimal (e.g., 30 public).

- Long term monitoring for visitor impacts on the intertidal community and visitor actions should be implemented, particularly at high use sites.
- Registration with ONP by visiting groups should be required, a database of group visits developed, group visits should be directed to designated high use zones, and possible permitting required over a certain group size. A specific criterion for group size was not identified. Registration provides a level of control of visitors and an opportunity to provide information to groups.

Groups over a certain size should have an ONP interpreter present to lead activities.

The MCWG did not identify any management issues associated with a specific site having two zone type designations (e.g., intertidal reserves and high use zone at Cape Alava). High use zones primarily address trampling impacts, not collections of souvenirs (i.e., shells, rocks, and sticks). If harvest or souvenir collection impacts become an issue within a high use zone, intertidal reserve status can be considered.

Locations

- Beach 3
- Beach 4/Starfish Point
- Ruby Beach
- Kalaloch
- Third Beach
- Second Beach
- Mora/Hole-in-the-Wall
- Cape Alava to Sand Point

Recommendations for allowable and prohibited activities are summarized in the matrix of allowable activities (Table 2 in reportX).

To capture the range of opinion associated with proposed high use zones, participants developed these options for implementation:

1. No designation of high use zones.
2. Recognize high use zones as areas where high visitation levels could require special management consideration.

The following levels of agreement were used for polling participants.

1. I do not agree with this option.
2. I may not be especially enthusiastic about it, but I can accept this option.
3. I think this is the best option available to us.
4. I am enthusiastic about this option

The results of member polling were as follows.

Implementation Options	Option 1: No designation of high use zones	Option 2: Recognize high use zones for special management consideration
WDFW	1	4
Quinault Nation	1	3
ONP	1	4
Conservation	1	4
USFWS	1	4
WSPRC	1	3
Commercial Fishing	1	3
Research	1	4
WDNR	2	3

This polling indicates that the general recommendations related to high use zones received strong support from all participants.